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Dental Digest

August 1948

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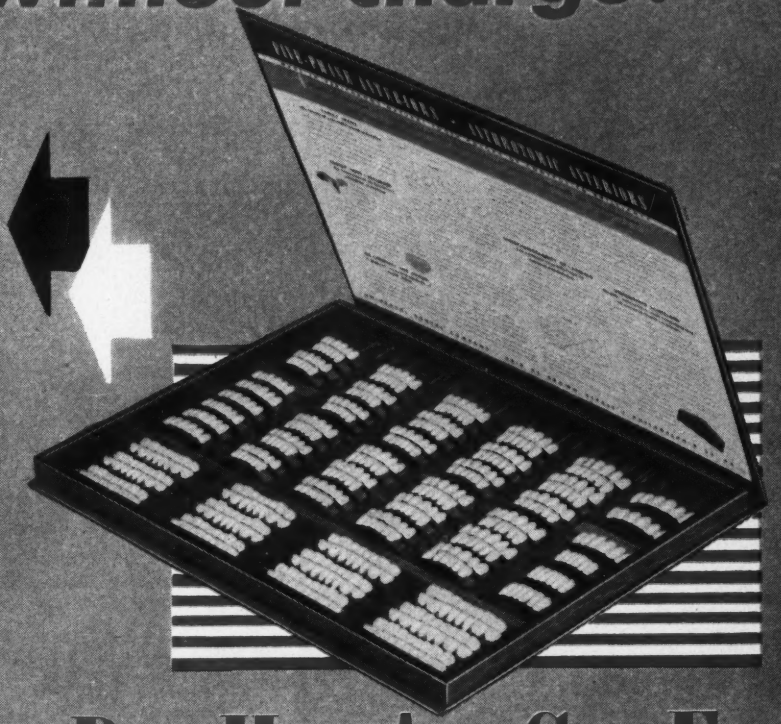

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Dental Digest

AUGUST 1948

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LEONARD FRANK, a well-known roentgenologist, started his profession three decades ago when "a coil and gas tubes [were used], screens were unheard of, and glass plates were the vogue." He gives five rules for correcting elongation and foreshortening. This article is one of a number Mr. Frank has written for the DIGEST in the past ten years.

WILLIAM R. DYKINS, D.D.S. (University of Pittsburgh, 1925) has lectured before most of the important dental groups in the country, and has published previously on various phases of mucostatics.

GABRIEL WEISS, D.D.S. (The Thomas W. Evans Dental Institute, University of Pennsylvania, 1941) reports another interesting case treated in his general practice. Agenetically missing upper lateral incisors were replaced by a cast partial denture after the cuspids had been removed distally and the central incisors brought together.

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Should FLUORINE *Be Added to Public Water Supplies?*

F. A. BULL, D.D.S., M.S.P.H., Madison, Wisconsin*

DIGEST

Attention is called to the circumstance that the public at large in a community or its duly elected officials at the local level decide whether or not their communal water supply is to be fluorinated. The opinion is expressed that it behooves the dental profession to see that these people are correctly informed so that they can exercise good judgment in making a decision.

A major charge against fluorination of domestic water supplies to reduce the incidence of caries is that fluorine has a cumulative action which is poisonous to the human system. The basis for this serious indictment is experimental research; specifically the feeding of lethal doses of the element to laboratory animals. In over a dozen cities in the United States, this piece of misleading evidence has not obscured the caries preventive potential of one part per million of fluorine in drinking water; these communities have already begun or are about to begin fluorinating their water supplies.

If the results of regular drinking of naturally fluorinated water by millions of people over a long period of time should prove to have been misleading, fluorination will have involved only an expenditure of ten cents per capita annually. Compared with the powerful evidence that the presence of fluorine in drinking water is a method of mass control of caries, the hypothetical objections to the addition of one part per million of fluorine to deficient water supplies appear to be unworthy reasons for postponing the adoption of this public health measure.

*Supervisor, Dental Education, Board of Health, The State of Wisconsin.

The numerous dental surveys that have been carried on in areas where fluorine is *naturally* present in the drinking water in a concentration of one part per million or more have definitely established two facts: (1) The incidence of dental caries is greatly reduced in these areas; (2) it is the action of the fluorine during the period of enamel calcification that has brought about the reduction in the incidence of dental decay.

These two facts were finally recognized by the American Dental Association in an editorial in the March 1, 1947, issue of the *Journal*. But the article also states that it has *not* been established that the addition of fluorides to fluorine-free domestic water will produce similar or identical results. The March 15, 1947, issue of the *Journal* states editorially that there has been sufficient evidence presented for the topical application of fluorine so that "its use by dentists can now be recommended as a general preventive measure."

It is encouraging to note that fluorine has been officially recognized as a factor in the control of dental caries. It has helped to this extent, that it is no longer necessary for individual investigators to prove that dental caries are actually reduced by about 60 per cent in areas where fluorine is present in appreciable amounts in the drinking water.

What is going to be done with these factual data? Can they be put to practical use for the benefit of the public; or, does the information only hold academic interest for the dental profession itself?

Arguments Against Fluorination

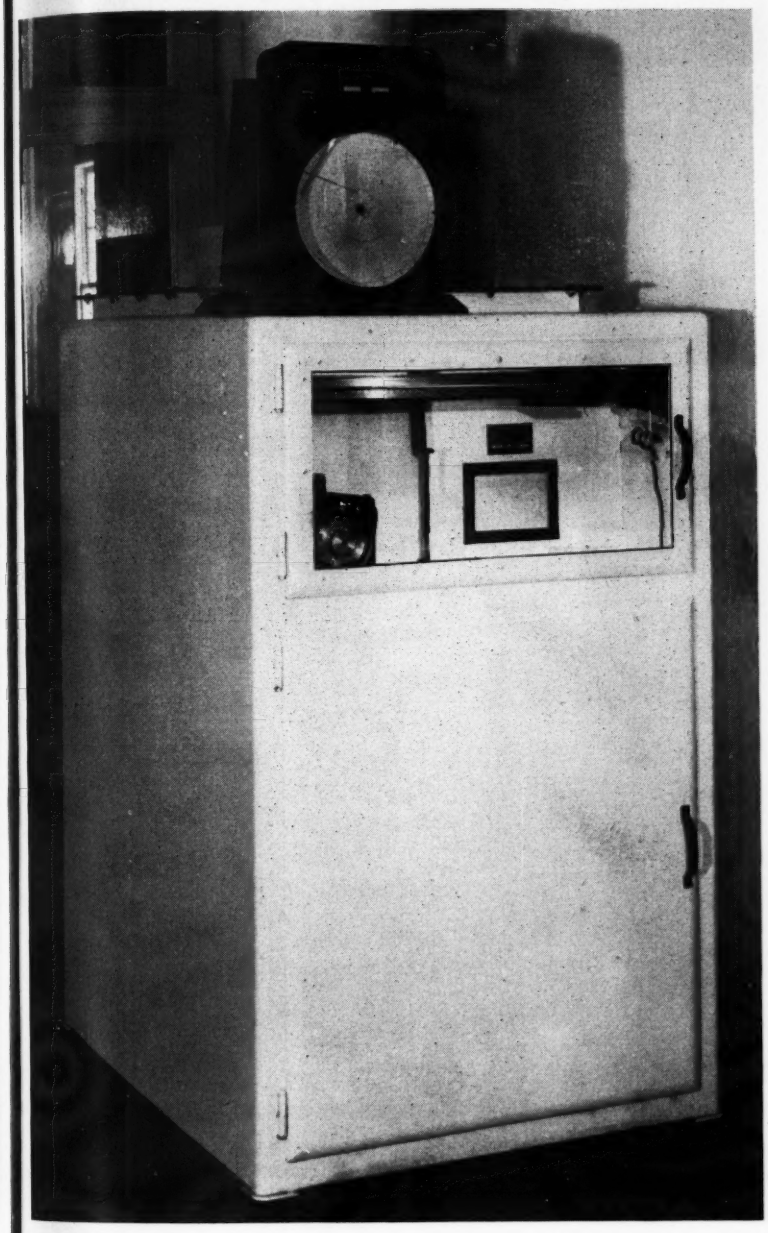
At the present time there are two arguments against the artificial fluorination of public water supplies:

1. The added fluorine in drinking water will *not* produce the same results in reducing dental caries as those produced by fluorine that is naturally present in the drinking water.

2. Fluorine in drinking water, whether naturally present or added, is a poison. It will produce toxic effects in the human body which are conducive to pathologic conditions involving bones and certain organs of the body.

Superiority of "Natural Fluorine"—The first argument—that there is a difference between so-called "natural fluorine" and added fluorine—is simply a conjecture.

In order for any fluorine to be present in water (1) the water must contact some substance, such as rock or soil, containing fluorine (and this is



1, *Omega Gravimetric Feeder used at Evanston Water Works to apply sodium fluoride to the water supply.*

referred to as "natural fluorine water"); or, (2) as in our proposal, the fluorine is extracted from the rock and added to the water. In either case, the fluorine is present in the water in the ion form.

I have been unable to find any authority in chemistry who will state that there is a difference between so-called "natural fluorine" in water and added fluorine. Experimentation for the past 30 years with laboratory animals has shown that it makes no difference how fluorine gets into water, as long as it is soluble. The body will absorb the element and the results in caries prevention will be identical with those produced by "natural fluorine water."

The most severe critics of the artificial fluorination of water are the biochemists and veterinarians. Their objection is not that there is a difference in the efficacy of naturally fluorinated and artificially fluorinated water (for they even admit that the results obtained are identical); they disapprove of *both* "natural" and "artificial" fluorine in water from the systemic point of view.

The human body receives iodine indifferently from water and seaweed; from vegetables grown in the iodine-rich soil of coastal regions and from iodine artificially added to the diet. Likewise is fluorine received.

Added Fluorine Toxic—The second argument—that fluorine acts as a cumulative poison in the body—is presented against the addition of fluorine to public water supplies, oftener than the first one. The organized opposition; namely, biochemists and veterinarians, is doing its best to exploit this argument. It goes so far as to suggest to the public that a deadly poison—rat poison—is to be fed to the public by adding it to the drinking water; publicly displays bones and organs of laboratory animals that have died of fluorine poisoning; and avoids stating that these animals were fed a diet containing *fifty thousand times* the dosage that is planned for human consumption.

Let us analyze this argument closely. What is there, that can be consumed by the human body in sufficient quantities, that will *not* poison the human system? Even too much water is toxic to the human being. Any drug produces toxic effects if enough of it is taken whereas the same drug is of great benefit to mankind if taken in proper amounts. Mercury, arsenic, and iodine are poisons but in proper dilutions have been a godsend to mankind.

Toxicity Claim Unfounded

Just what is actually known of pathologic changes in human beings caused by ingesting fluorine?

For the past 100 years people in many parts of the United States have been drinking fluorine-containing water throughout their lives. At the present time there are millions of people in the United States who drink water daily that contains from one

part per million to eight parts per million of fluorine, just as their parents and grandparents did.

Medical and dental science has been able to detect only one bad systemic effect as a result of this fluorine ingestion—the mottling of enamel in cases where people have regularly drunk water with two parts per million or more of fluorine. If medical and dental science can detect no pathologic conditions in the hundreds of thousands of people who every day have drunk water containing from three to 15 parts per million of fluorine, how can it be said that the addition of only *one* part per million of fluorine to fluorine-free drinking water will cause pathologic changes?

Experimentation Before Usage

Nature has presented one of the largest human experiments ever known. And it has been going on for generations. The many dental surveys indicate that approximately one part per million of fluorine provides as much immunity to dental caries (about 60 per cent) as higher concentrations; also, that this level (1 p.p.m.) positively causes no mottling of the enamel.

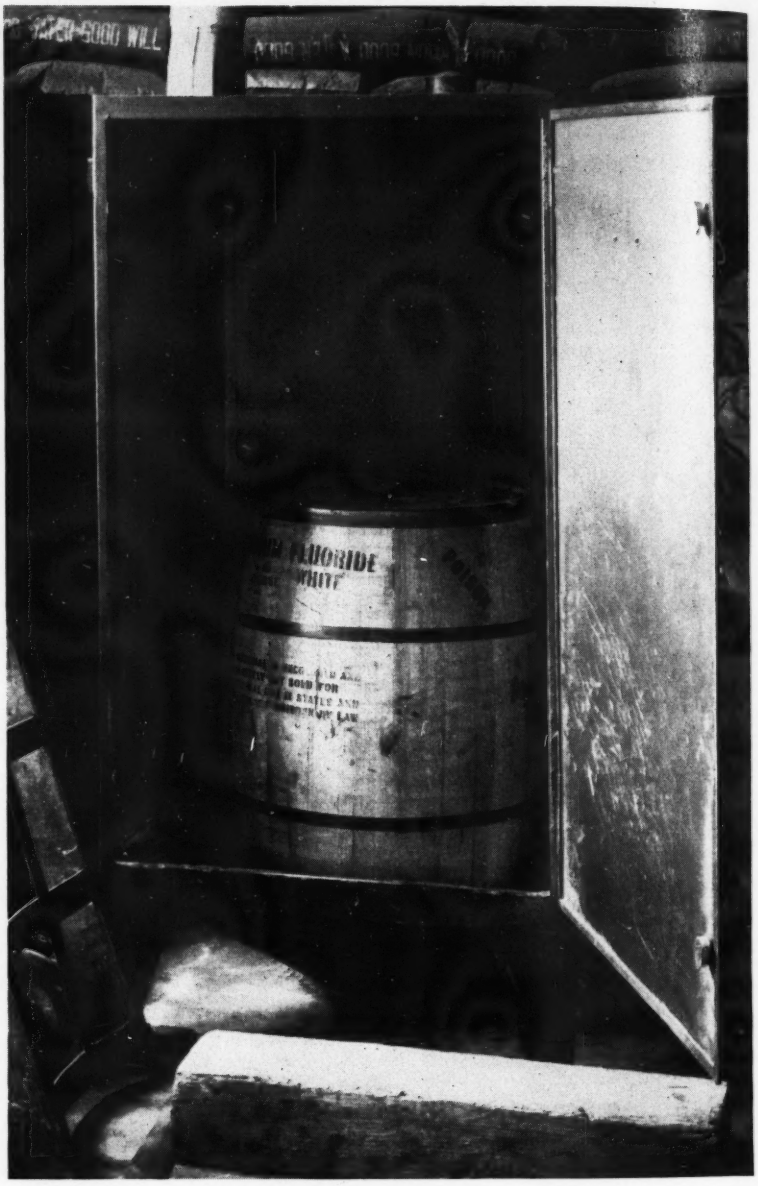
What practical use, if any, should be made of these data? It might be well to ask ourselves these questions:

1. Can any public health measure be cited that was subjected, before its adoption, to as many years of human application as the fluorination of water?

2. How many years of experimentation in immunizing human beings against smallpox, diphtheria, and typhoid antedated immunization as a public health measure?

3. For how many years was water chlorinated for human consumption, milk pasteurized, or silver nitrate used in the eyes of the newborn to prevent gonorrheal blindness, before these procedures became public health measures?

In comparing the limited application of these procedures among human beings, prior to their introduction as public health measures, with the many years that millions of people have drunk fluorinated water, it is apparent that none of the processes were tested as thoroughly as the fluorination of water has *already* been *before* its nation-wide acceptance as a public health measure.



2. ***Special hopper used for dumping sodium fluoride into Omega Gravimetric Feeder at Evanston Water Works. This hopper is on the floor above the Feeder. (Photographs by courtesy of the Department of Public Works, Evanston, Illinois.)***

Resistance to Public Health Measures

The same arguments were presented 30 to 40 years ago against these time-proved public health measures as are being presented against the addition of fluorine to drinking water at the present time. Consider the chlorination of drinking water: The first argument against it was that it would not prevent disease; the second, that it would have a cumulative toxic effect on human beings. Likewise, consider iodine for goiter prevention: The first argument against it was that it would not prevent simple

goiter; the second, that its cumulative effect would produce a toxic condition much more serious than simple goiter.

Two stock objections emerge from a survey of the resistance to all new public health measures. These are today being raised against fluorination of public water supplies; namely, (1) the same result will not be obtained from artificially fluorinated water as from water in which fluorine is naturally present; (2) added fluorine will have cumulative toxic effects on the human body.

Initiation of Public Health Measures

It might be well to give a little thought to the history of how public health measures have been initiated into common use. Did they originate from advice, leadership, or action of the so-called "top groups" or "authorities?" The answer is definitely "no." Public health measures were initiated and carried out despite opposition of so-called "higher authorities."

The early history of such public health measures as abolishing the common drinking cup, prevention of gonorrheal blindness in newborn infants, goiter prevention by use of iodine, and chlorination of water bears out this statement. Public health was built on positive, progressive policies and thought. Men who had the foresight, conviction, leadership, and courage to attack a public health problem even in the face of strong opposition, were the men who brought public health to the position it now occupies. Remember! There is still opposition to any public health measure one can name.

Status of Dental Care

Consider our dental health problem from a strictly public health point of view.

Lack of Dental Manpower—The American Dental Association estimates that present dental manpower, if called upon, could take care of only one-fourth to one-half of the dentistry required. Thus, one-half to three-fourths of dental diseases in the United States would have to remain untreated even if the people had the desire and money to seek dental services.

Prevention vs. Restoration—An overwhelming mass of data indicates that about two-thirds of dental caries can be prevented by the simple and inexpensive method of adding fluorine to public water supplies. This means that more dental caries can actually be prevented than the entire dental profession can treat in their offices. (This fact is becoming generally known to the public as well as to the profession.)

Public Interest in Dental Health

The public looks to the dental profession for positive leadership and especially to those members engaged in public health work. It is entitled to an answer. That answer must be one of the following:

1. Fluorine artificially added to water will not benefit the teeth.
2. Fluorine artificially added to water will do harm to the human system and therefore should not be used.
3. Let us wait for 15 to 50 years and see what happens in the cities that are now adding fluorine to their public water supplies.
4. Start adding fluorine to public water supplies now.

It must be remembered that this is not a question to be decided, finally, by any individual dentist or select group of dentists. The public is just as vitally concerned with the prevention of dental disease as the dental and public health professions. The public has access to the same factual data, on the role of fluorine in caries prevention, that we have.

The public, when once informed, is in a position to act as a jury on many matters pertaining to public health, especially on those public health measures which require legislative action at the local level. There already have been instances in which the public has demanded the introduction of fluorine to their public water supplies to reduce dental caries, in advance of any such demand by the dental profession.

Mechanism of Public Action

In at least two of the cities that are now carrying on fluorination projects, the initial impetus was provided by public-health-minded citizens of the community and not by the dental profession. Professional controversy arouses such questions as this in the minds of the public: Is the dental profession *really* interested in preventing dental caries? While this is an unfair question, it does illustrate an attitude encountered in public relations contacts.

Despite the opposition of persons or groups to the fluorination of public water supplies, increasing numbers of communities will inaugurate this public health measure; the public is rapidly becoming convinced that it is the proper thing to do for the welfare of present and future generations. The issue was presented to a Common Council in one city to make its own decision. After vigorous arguments on all sides, the Council voted to begin this public health measure immediately.

Dynamic Point of View

Assume that the addition of fluorine to public water supplies proved to be a complete failure in reducing dental caries. Those who were active in the promotion of this public health measure would be in error only to the extent of having spent about ten cents per capita annually in trying to prevent dental disease.

Assume, on the other hand, that the artificial fluorination of water reduced dental caries the anticipated 60 per cent, more or less. The measure would have prevented a vast amount of dental disease and suffering in the younger generation. (Two cities that have been fluorinating their public water supplies for the past two years are *already* reporting an improvement in dental health.)

Trend Toward Acceptance

1. At the present time two state dental societies (Wisconsin and Colorado) and two state boards of health (Wisconsin and Colorado) are recommending the fluorination of public

water supplies to prevent dental caries.

2. About 15 cities in the United States are now fluorinating their drinking water or are in the process of installing fluorinating equipment. These cities represent a population of well over one-half million people.

3. Rochester, Minnesota, where the members of the medical and dental professions are almost all on the staff of the Mayo Clinic, is proceeding with the fluorination of its drinking water.

(A decrease in the incidence of dental caries reduces the incidence, also, of oral infections and the bodily ills that are the sequel of those infections. This is the reason why physicians are supporting the fluorination of public water supplies.)

Conclusion

What better answer could be given to the question, "Should public water supplies be fluorinated now," than the citation of this affirmative trend toward adoption of the procedure by public-health-minded communities?

Yes, public water supplies deficient in fluorine *should* be fluorinated as soon as possible. It is time for the dental profession to inform the public that it recommends this important public health measure.

State Office Building.

Annual Death Rates

From the Principal Causes for Male Physicians Compared With White Males in the General Population* Ages 25 and Over; United States, 1938-1942

Cause of Death	Death Rates per 100,000		Ratio of Death Rates:
	Male Physicians	U. S. White Males	Physicians to White Males
All causes of death	2,052.6	2,022.1	1.02
Leukemia and aleukemias	11.4	6.5	1.75
Biliary calculi and other diseases of the gall bladder	12.2	8.4	1.45
Intracranial lesions of vascular origin	222.8	185.9	1.20
Diseases of the heart and coronary arteries**	845.3	713.7	1.18
Arteriosclerosis	50.1	43.2	1.16
Cirrhosis of the liver	25.8	23.3	1.11
Pneumonia and influenza	112.5	103.0	1.09
Diabetes mellitus	44.5	41.2	1.08
Suicide	39.0	37.6	1.04
Automobile accidents	44.2	49.5	.89
Cancer	198.4	244.5	.81
Appendicitis	10.3	13.4	.77
Hernia and intestinal obstruction	12.1	16.1	.75
Nephritis**	119.3	162.9	.73
Ulcer of the stomach or duodenum	12.8	20.8	.62
Accidents, other than automobile	50.6	84.0	.60
Diseases of the prostate	15.8	29.1	.54
Tuberculosis	31.9	70.4	.45
Syphilis	9.1	26.5	.34

*The general population death rates have been adjusted on the basis of the age distribution of male physicians in 1940.

**The death rates relate to the period 1939-1942. Because of changes in the classification procedure (International List of Causes of Death) introduced in 1939, data for the general population for this cause are not comparable with earlier years.

Dentists and physicians are presumed to have the same death rate.

From *Statistical Bulletin*, Metropolitan Life Insurance Company 28:7 (October) 1947.

Correction of ELONGATION *and* FORESHORTENING *in Dental Roentgenography*

LEONARD FRANK, San Francisco

DIGEST

The "angle" referred to in dental roentgenography is actually a combination of two angles—the vertical and horizontal angles. Of these the vertical angle is primary; the horizontal angle merely supplements it in a corrective role.

How to discover the vertical angle and regulate the projection of the central ray according to its location is formulated for both the maxilla and mandible.

WHEN THE technique of x-raying the teeth and adjacent parts is discussed, reference is made to the "angle" used to project the central ray. This is a misnomer. It should be realized that this "angle" is actually a combination of two angles: (1) the vertical angle and (2) the horizontal angle.

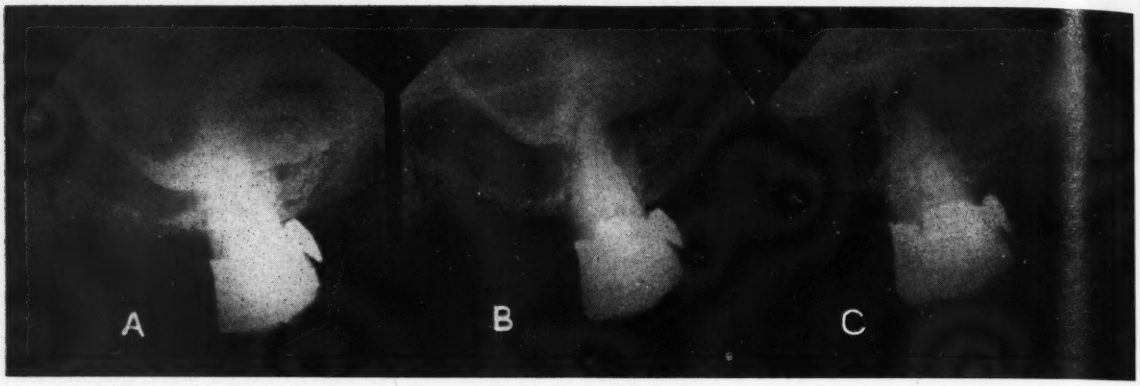
Two Angles Involved

The *vertical angle* projects the central ray in relation to the long axis of the tooth; that is, up and down the tooth from the occlusal surface to the apical end. This angle, improperly directed, causes elongation and foreshortening (Fig. 1) and also carries down the shadow of the zygoma over the apexes of the upper molar teeth (Fig. 2).

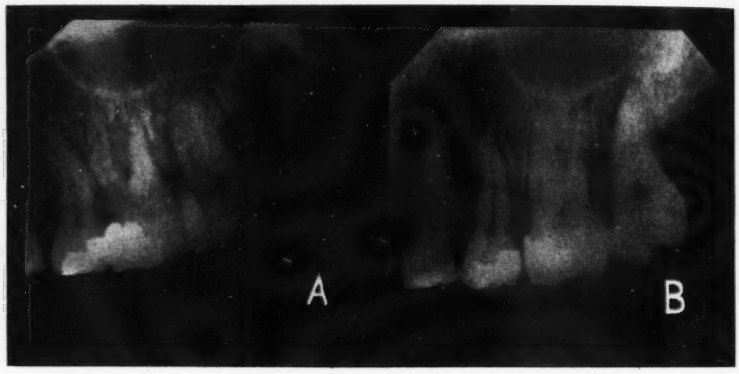
The *horizontal angle* projects the central ray in relation to the short axis of the tooth; that is, across the tooth from the mesial to the distal or from the distal to the mesial. This angle, improperly directed, causes overlapping of contact points, superimposition of one object on another, and superimposition of roots. The horizontal angle is a supplemental angle—and that only.

The vertical angle is the main or primary angle. After the vertical angle has been computed, the overlapping cuspal interference is corrected by directing the horizontal angle to the mesial or the distal, whichever direction will clear the interference. The vertical angle is not changed; it is

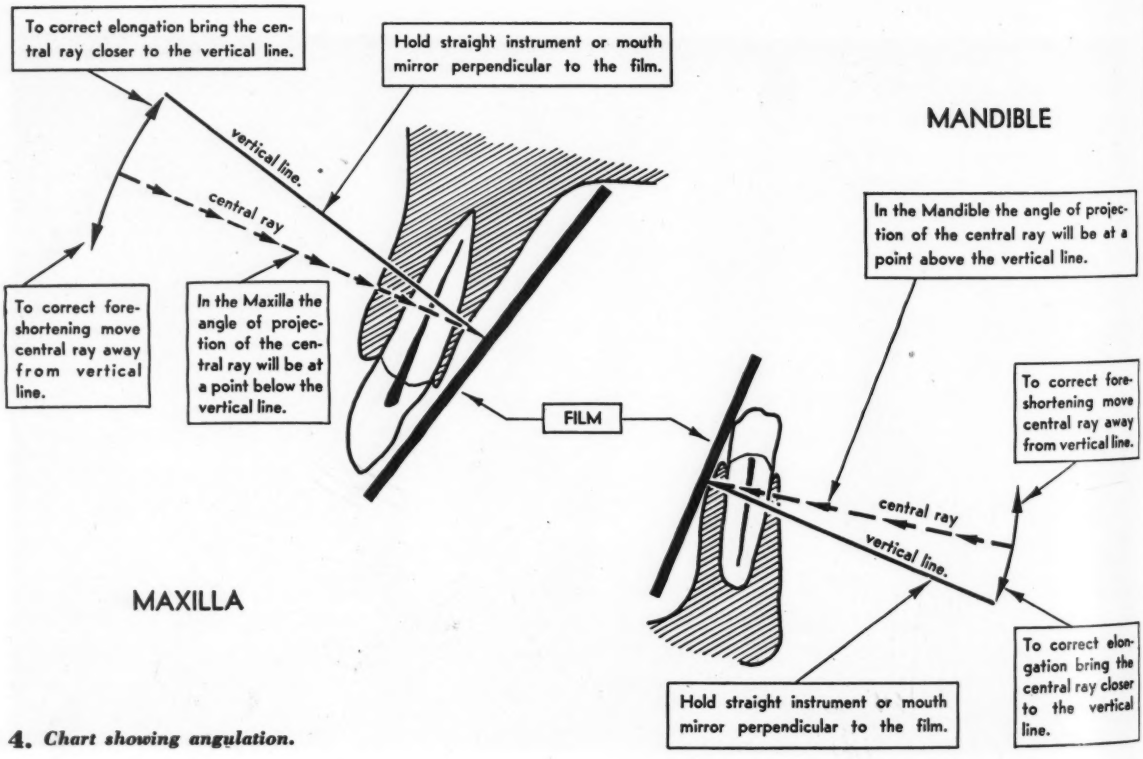
1. *A, Foreshortened image. B, Elongated image. C, Correct image.*



2. ***A, Zygoma superimposed over upper molar roots due to foreshortening. B, Angle has been changed and zygoma partly "lifted." Anatomicopathology begins to appear. C, Angle has again been changed. Zygoma has been entirely "lifted" and the pathologic condition completely revealed.***



3. ***A, Contact points and roots of first and second molars are superimposed due to improper horizontal angle. B, Horizontal angle has been corrected. Deep pocket involving the second molar brought into view.***


To correct elongation bring the central ray closer to the vertical line.
Hold straight instrument or mouth mirror perpendicular to the film.
MANDIBLE
vertical line.
central ray
In the Mandible the angle of projection of the central ray will be at a point above the vertical line.
To correct foreshortening move central ray away from vertical line.
In the Maxilla the angle of projection of the central ray will be at a point below the vertical line.
FILM
To correct foreshortening move central ray away from vertical line.
central ray
vertical line.
MAXILLA
To correct elongation bring the central ray closer to the vertical line.
Hold straight instrument or mouth mirror perpendicular to the film.

4. ***Chart showing angulation.***

merely corrected with the horizontal angle (Fig. 3).

Locating Vertical Angle

To picture any given region in the dental arch, it is necessary to coordinate the vertical and horizontal angles. Inasmuch as the vertical angle is the cause of the great majority of errors in dental roentgenography, only the vertical angle will be considered here. The formula for finding it is as follows:

1. Project the central ray at a right angle to an imaginary line that bisects the long axis of the tooth and the long axis of the film.

2. Place a mouth mirror or some straight instrument perpendicular to the film (called the vertical line on the chart). It will be found that the "right angle to an imaginary line" falls below the vertical line in the maxilla and in the mandible it is above the vertical line. This procedure does away with "imaginary lines" and provides a "seeable line" that can be used to compute angles and correct errors.

(It must be emphasized at this point that the vertical line is *not* the vertical angle. The vertical line is established by placing a mouth mirror or some straight instrument perpendicular to the film; the vertical angle is the central ray of projection that falls below the vertical line in the maxilla and is above the vertical line in the mandible.)

Five Rules

The following are the five rules for correction of elongation and foreshortening of dental roentgenograms:

1. Hold a straight instrument perpendicular to the film. This is the vertical line.

2. In the maxilla project the central ray to the film from a point slightly below the vertical line.

3. In the mandible project the central ray to the film from a point slightly above the vertical line.

4. If the resulting roentgenogram of the teeth in either the maxilla or the mandible appears to be foreshortened, change the angle by projecting the central ray from a point *farther away* from the vertical line.

5. If the resulting roentgenogram of the teeth in either the maxilla or the mandible appears to be elongated, change the angle by projecting the central ray from a point *closer* to the vertical line.

If these rules are followed and the chart studied with care, most of the errors caused by incorrect projection of the vertical angle can be eliminated.

450 *Sutter Street.*

Oral Manifestations of Allergy

JOSEPH HARKAVY, M.D., New York

Labial Reactions

Allergic reactions of the lips may be in the form of cheilitis, herpes labialis, or angio-neurotic edema. The cause may be contact with lipstick, tooth paste, mouth washes; eucalyptus cough drops, menthol lozenges; preparations containing oil of cinnamon or oil of cloves; dental plates, amalgam tooth filling, mustache wax or foods such as oranges or tomato juice, mango; chewing of poison ivy leaves.

Oral Symptoms

In the mouth, lesions appear in the form of canker sores, aphthous stomatitis, and glossitis. The symptoms in the buccal mucosa may occur simultaneously with cutaneous manifestation and vary from slight enanthems to vesicular and ulcerative stomatitis as well as purpura (seen especially in hypersensitiveness to drugs like arsphenamine).

Recurrent canker sores may be associated with gastrointestinal symptoms such as distension, belching, sour stomach, and constipation resulting from various food allergies especially eggs, milk, and fruit.

Edema and erythema with formation of papules and vesicles have been observed in the buccal mucosa of patients suffering from a dermatitis due to asparagus and lemons, balsam of Peru, potassium iodide, paraphenyldiamine dyes, atropin, and rubber.

From *The New York State Dental Journal* 14:149-155 (March) 1948.

We Can't Pay You, But—

No DENTAL author can ever be *paid* for a valuable technical or scientific article. The value of such material is above a monetary basis. In the preparation of a technical article, however, an author often expends money for drawings, photographs, models, or graphs. We should like to help defray some of these expenses.

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A Novel Method for Obtaining an UPPER MUCOSTATIC IMPRESSION

WILLIAM R. DYKINS, D.D.S., Glen-Lyon, Pennsylvania

DIGEST

To avoid disturbing the soft tissues when a final upper impression is taken, thin coats of free-flowing cement are first applied to the tissues. Each coat is allowed to dry before the next one is superimposed. The resulting rigidity of form prevents disturbance of the soft tissues or reduces it to a negligible minimum.

This is one way to apply the mucostatic principle in impression-taking.

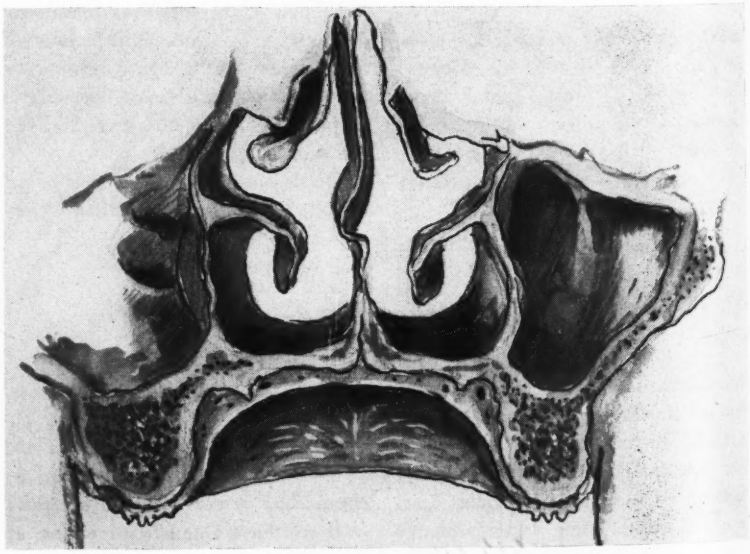
NOW FIRMLY established in the minds of thinking dentists as the basic concept in denture construction, the mucostatic principle lends itself readily to various methods in impression-taking.

In mucostatics, all strivings in technique are directed toward non-disturbance of soft tissue or, at least, reduction of any such disturbance to a negligible minimum.

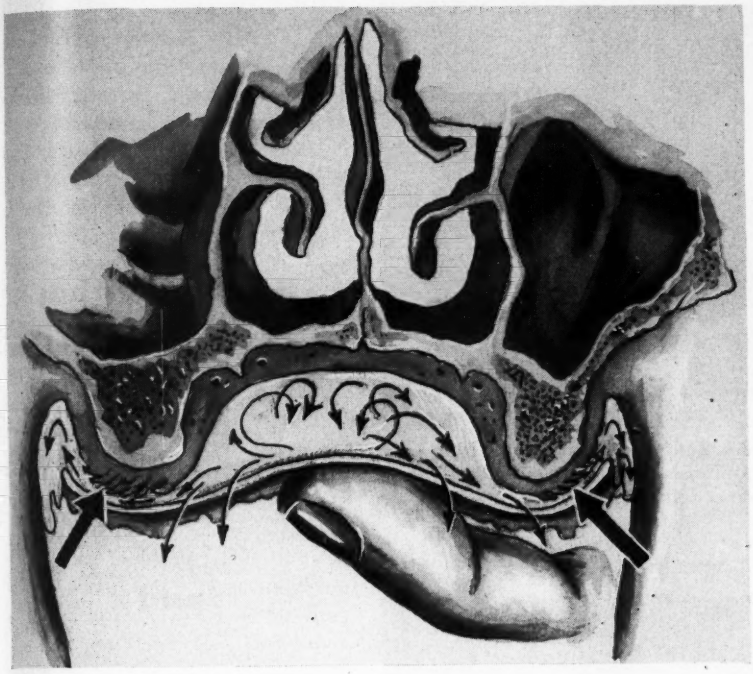
Problem of Displaceable Tissue

The upper jaw presents a different problem from the lower inasmuch as the upper comprises, in a general way, two convex surfaces joined together by a concave surface while the lower is, generally, a single convex surface. Owing to the fact that the vault of the mouth is a series of irregular curves, the customary mass impression must contend with the agitation of the impression cement as it strives to flow (1) upward to a collision and rebound in the palatal area and (2) both downward and upward around the ridges. Stresses produced by this maelstrom type of flow tend strongly to coerce displaceable tissue into a distorted position (Fig. 2). (This turbulent movement of the impression cement does not exist on the lower for the material splits on the single convexity of the ridge into two downward flowing streams.)

There are occasions, of course, when the maxilla is covered by non-displaceable tissue. In this case, the turbulent flow of material presents no problem at all and the mass impression is effective. But, if the upper mouth is covered by an irregular thickness of displaceable tissues; that is, wobbly tuberosities, pendulous tissues in the anterior area, and soft tissues adjacent to the torus median area, the mass impression is almost certain to distort these tissues. Distorted tissues invariably fight to resume normal position. When they do not succeed, they must atrophy from coercive disturbance. To the student



1. ***Frontal section of skull viewed from behind. Note form of soft tissue.***



2. ***Soft tissue displaced by conventional mass impression.***

in mucostatics, the resultant loss of stability in either case is readily understandable.

Procedure for "Painted" Impression

The idea of the "painted" impression originated from an attempt to eliminate the problem of the turbulent flow of cement and to overcome the hydrostatic pressures generated within the cement mass.

Importance of Mouth Dryness—Success with a "painted" impression depends upon complete mouth dryness. This is fundamental because the thickness of the saliva film over the tissues will predetermine an error (both the type and amount of error) in the impression. As an aid to securing mouth dryness, the patient is premedicated with atropine sulfate 1/150 grain four or five times over a four-hour period before the impression is taken.

Supporting Tray—A supporting tray will be needed to remove the completed "painted" impression without breakage. Therefore, a snap compound impression is taken and the buccal and labial walls are cut out two or three millimeters. The resultant cast will, then, be oversized in these areas. Ackerman Tra-Base is then adapted to the conventional outline. The tray is set aside until time for its use.

1. The mouth is wiped dry with gauze and a small J & J pack is placed against the cheek over the Stenson duct to absorb any saliva flowing from the duct.

2. The brush used for painting is similar to a mucilage brush having three or four rows of bristles with about one-half inch span. The painting edge is cut to a slight taper to facilitate painting around the tuberosities and into hollows.

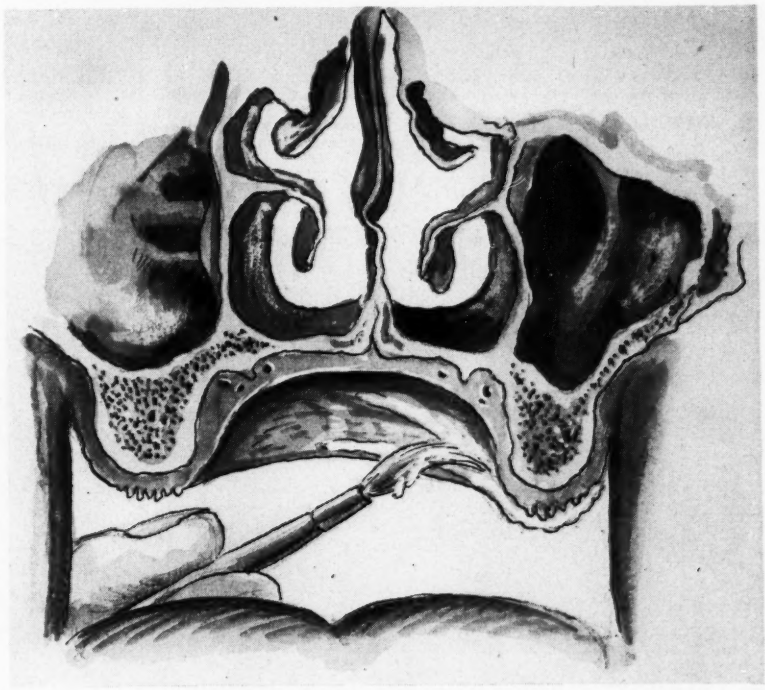
3. About one-third of a teaspoonful of slow-setting Ackerman impression cement is spatulated to a free-flowing consistency.

4. A coating of cement, so thin as to be almost translucent, is applied to the entire base area.

5. Gauze is removed from the Stenson duct.

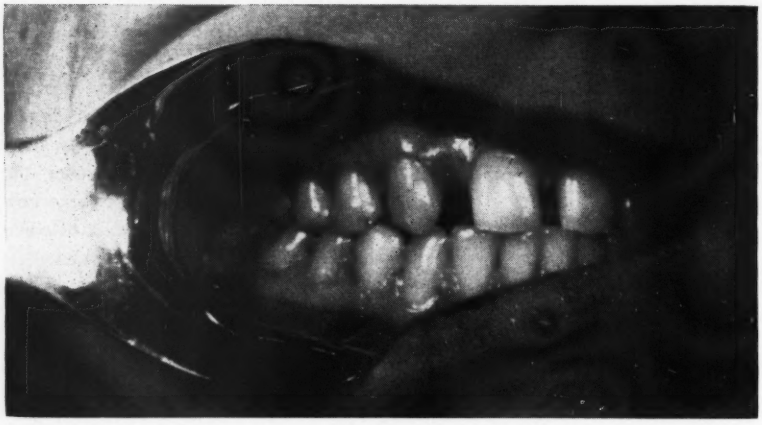
6. As soon as the cement has set, a test is made. This is done by touching the cement lightly with a ball burnisher, preferably over the distal of the tuberosities, to ascertain if there is any movement between the cement coat and the tissues.

(*Continued on page* 358)



3. ***Natural tissue position maintained by "painting."***

1. *Front view of teeth in centric occlusion before treatment. Note diastemata between central incisors and between central incisors and cuspids. These spaces resulted from the absence of lateral incisors which were congenitally missing.*



2. *Right side view of teeth in centric occlusion before treatment.*

3. *Left side view of teeth in centric occlusion before treatment. Note cross bite caused by lingual version of maxillary bicuspids and molars.*

Mouth Rehabilitation Combining Orthodontic and Prosthodontic Treatment

GABRIEL WEISS, D.D.S.,
Philadelphia

DIGEST

The absence of lateral incisors, agenetically missing, was responsible for spaces in the anterior segment of the maxilla of a young woman to whom the diastemata were esthetically objectionable.

The central incisors were brought together and the cuspids moved distally by orthodontic treatment. Lateral incisors were placed in the arch by means of a cast partial denture.

A YOUNG woman in her early twenties presented with diastemata between her upper anterior teeth resulting from the absence of maxillary lateral

incisors (Fig. 1). She wanted this condition corrected.

A careful diagnostic study included a complete case history, a thorough clinical and roentgenographic examination, and accurate study models.

1. Maxillary lateral incisors were agenetically missing.

2. Teeth present were sound and relatively caries-free.

3. Occlusion was normal except on the left side where lingual version of the maxillary bicuspids and molars had caused a cross bite (Figs. 1, 2, and 3).

Treatment

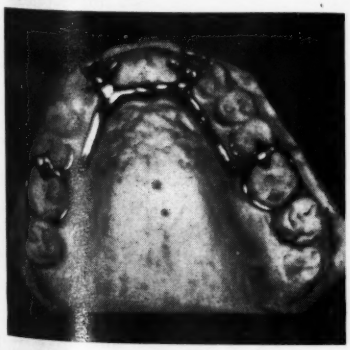
After careful study it was decided to correct the cross bite by means of orthodontic treatment; also, to bring the maxillary central incisors together while the cuspids were moved to their normal position. This procedure would provide spaces for placement of lateral incisors.

1. Orthodontic treatment consisted of the use of a fixed lingual arch appliance with finger springs.

2. After the teeth had been moved, a removable retainer of the Hawley type was worn by the patient for three months (Figs. 4, 5, and 6).

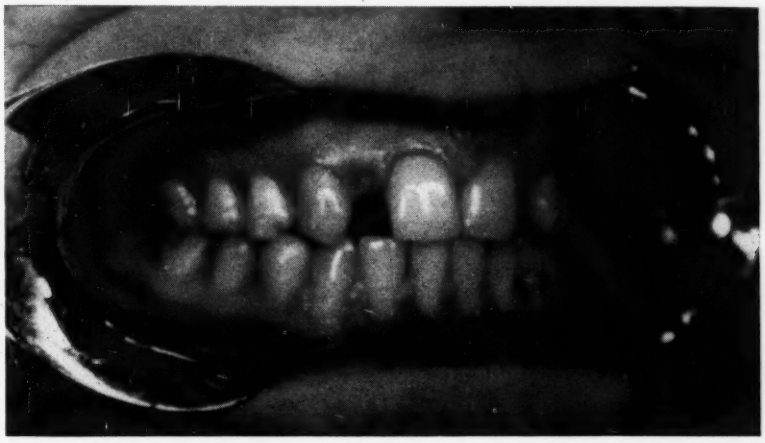
3. Because the patient had sound teeth which were relatively caries-free, it was decided to supply lateral incisors by means of a cast partial denture (Fig. 7). This prosthesis could at the same time act as a retainer.

(*Continued on next page*)



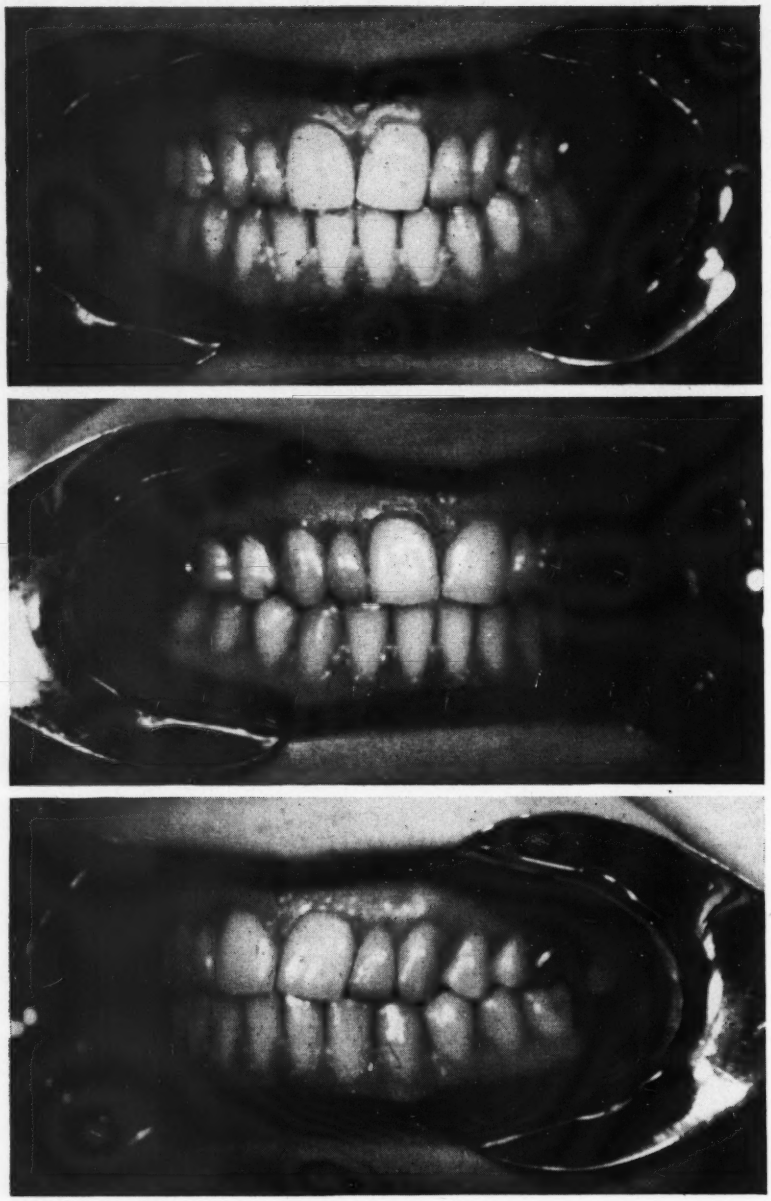
7. *Cast removable partial denture supplying lateral incisors and also acting as a retainer.*

4. *Centric occlusion after treatment. Diastemata have been closed and spaces created for placement of lateral incisors.*



5. *Right side view of centric occlusion after treatment.*

6. *Left side view of centric occlusion after treatment. Note normal bite on left side after correction of lingual version of upper posterior teeth.*



8, 9, and 10. ***Centric occlusion with partial denture in position.***

Results

The esthetic as well as the functional results were excellent (Figs. 8, 9, and 10). Re-examination several months after treatment showed no adverse change.

Medical Arts Building.

A Novel Method For Obtaining An Upper Mucostatic Impression (*Continued from page* 355)

7. *Multiple Cement Coatings*—When there is no discernible interplay between the cement and tissues, additional coats may be applied safely and, barring an accident during removal, a stable impression is definitely assured. Usually, four or five thin coats are applied, each being carefully dried before the next is superimposed.

This bulk of cement is necessary not only to prevent breakage upon removal but, also, to provide the tissues with an artificial and imperturbable rigidity of form when the final over-all impression is taken (Fig. 3).

In applying these coats, especially the first, care must be taken to prevent the cement from flowing distally to the "ah line;" otherwise, the patient will be predisposed to gagging or swallowing, either of which movements tends to loosen the cement and ruin the impression.

8. *Final Impression*—The final over-all impression is taken with the Ackerman Tra-Base tray filled approximately one-half full of cement. The tray is brought to place steadily until it is in firm contact with the "painted" impression and will go no further. When this application is set, the borders are examined by lifting the cheeks and lip. If any deficiencies are found, the cement is wiped into them before the impression is removed. Upon removal, peripheral overflows and excess cement that have flowed downward from the borders are trimmed away and the impression is returned to the mouth and reseated for confirmation of stability.

Comments

Failure may still be encountered if the denture base does not duplicate the impression exactly. The mucostatic principle which demands that the denture base as well as the impression shall be accurate negatives of the ridge tissues in their natural, passive form must never be forgotten.

To date, no plastic has been made that can be relied upon for this vital accuracy. A faithful reproduction of the impression can be attained *only* by using a suitable and accurate metal casting.

39 *East Maine Street.*

The EDITOR'S *Page*

THE LATE summer and early autumn months are anticipated by many parents with the dread of poliomyelitis. According to one of the speeches before the First International Poliomyelitis Conference, held in New York in July, this disease is striking infants less and less, and teen-age youths and adults are becoming more susceptible.

The dentist must be alerted to the importance of his role in the prevention and recognition of poliomyelitis, and be informed of some of the aftermath of the disease that involves the muscles of the face and jaws. It is now generally accepted that the portal of entry for the polio virus is through the mouth and nose and that the upper oropharyngeal portion of the alimentary tract is more likely the portal than the lower gastro-intestinal portion. It is also known that the virus passes centripetally over axons of the fifth nerve to the gasserian ganglion. With the structures of the mouth playing such an important part in the entry and invasion of the virus, it is important that the dentist exercise extreme care in the hygiene of his office procedures to prevent the possible transmission of the polio virus.

Tinn[1] makes these specific precautionary suggestions: (1) Restriction in the use of nitrous oxide-oxygen anesthesia during the epidemic periods because of the danger of transmission of the virus through the facepiece, breathing bag, and tubing of the apparatus. (2) Scrupulous cleanliness of the instrument bracket table. (3) The use of individual sterile cotton pellet and waste receptacles for each patient. (4) Boiling of syringes and other instruments for twenty minutes. (5) "Tumblers, water syringes, and all instruments used in the mouth which it is not advisable to sterilize by boiling should be in duplicate and sterilized by a thorough immersion in antiseptic between patients." (6) Careful sterilization of the saliva ejector, burs and handpieces.

It might be well for dentists to plan their treatment programs so that children and young adults will be cared for at times other than during the epidemic period of late summer. Many parents and many dentists rush children to treatment immediately before the beginning of the school term. If the polio virus may enter through the carious tooth, as brilliantly described by Reese and Frisch,[2] or through the mucous membrane of the oropharynx, it might be preventive wisdom to keep the child out of the dental office during the season of greatest infection.

Dentists, who should play their important role in all forms of preventive medicine, should be aware of the early signs and symptoms of poliomyelitis. John A. Anderson, Professor of Pediatrics at the University of Utah, describes these most common early symptoms:

"Sore throat, nausea, vomiting, headache, fever, and drowsiness. Severe headache is rare in small children, especially when other symptoms constituting the acute illness are comparatively mild. Therefore, whenever this combination is found—a degree of headache disproportionate to other symptoms—along with a history of past exposure to the children with similar symptoms, the child should be watched carefully—preferably in a hospital—for the detection of more specific signs of poliomyelitis.

"When stiffness and pain in the back, neck, or extremities supervene on these early symptoms a tentative diagnosis of poliomyelitis becomes justified. The stiffness of the back is the most common symptom. Concurrently, 'muscle spasm' may be noted. This is a state of involuntary muscle contraction, which is characterized by an intense pain when attempts are made to stretch these muscles beyond certain points. These signs of 'irritation' of the central nervous system usually precede true paralysis by two or three days. Bulbar cases, those with severe brain involvement, will show more abrupt onset of the symptoms and generally appear to be more acutely ill than others."

Because there are other peripheral manifestations, notably in muscles of the head and face, that follow involvement of the motor cranial nuclei, the dentist should be familiar with these frequent complications: weakness of the muscles of facial expression (involvement of the seventh nerve); weakness or imbalance of the chewing mechanism (fifth nerve); weakness of the tongue (twelfth nerve); uvular drawing to one side (motor division, fifth nerve); failure of elevation of palate, movement of tonsillar fauces, difficulty in swallowing (ninth, tenth, and eleventh nerve involvements).

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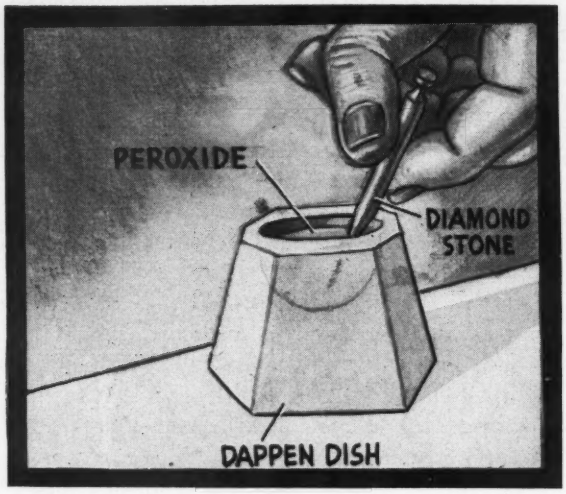
[1]Tinn, C. A.: Acute Anterior Poliomyelitis and the Dental Surgeon, J.D.A. South Africa, 3:5:187-188 (May 15) 1948.
[2]Reese, H. H., and Frisch, J. C.: The Carious Tooth as a Portal of Entry for Poliomyelitis: A Progress Report, DENTAL DIGEST 52:7:368-372 (July) 1946.

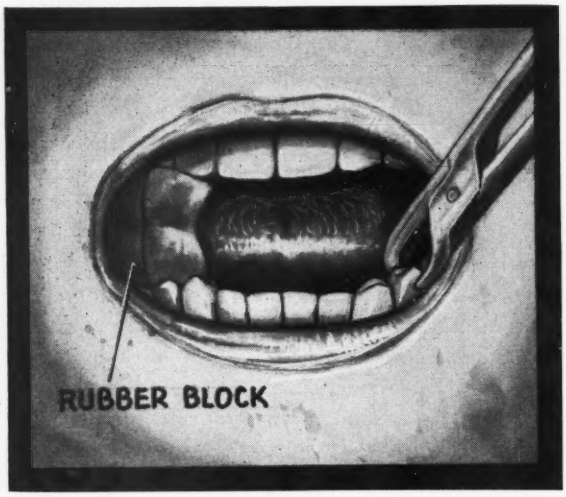


1

Cleaning Diamond Points

Saul Goodman, D.D.S., Nutley, New Jersey

1. Cleanse the diamond stones and points with soap and water and immerse in full strength hydrogen peroxide for a few minutes. Do not allow the instruments to remain in the peroxide too long or they will rust. Dry after removal. Amalgam and other debris on the diamond instruments is removed by this method.

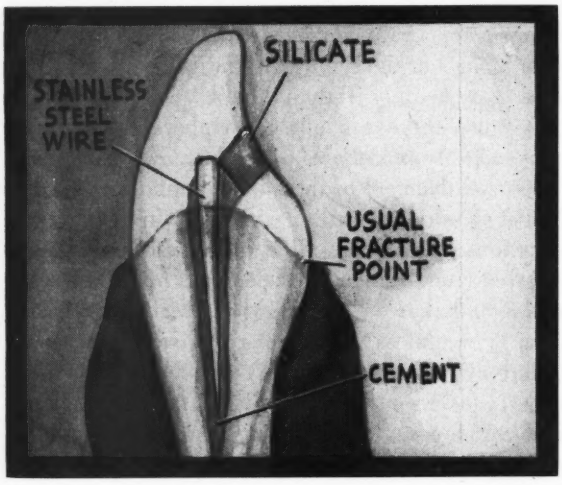


2

Protecting Opposite Condyle when Extracting Lower Molars

A. M. San Dretto, D.D.S., Racine, Wisconsin

2. When extracting lower molars, invariably so much movement is produced that the opposite condyle receives strain and the patient complains of pain. This pain can be prevented by inserting a rubber mouth prop on the opposite side of the jaw from the area of extraction and having the patient bite on the mouth prop. This will stabilize the jaw and prevent condyle trauma.



3

Reinforcement of Pulpless Teeth

Chester J. Henschel, D.D.S., New York

3. After root therapy has been completed and the prognosis appears to be favorable, enough root filling material is removed to make room for a stainless steel hard wire. This should be tapered at the apical end and positioned so that the middle of the wire is at the neck of the tooth which is the usual site of fracture.

READERS *are Urged to Collect* $10.00

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay $10.00 on publication.

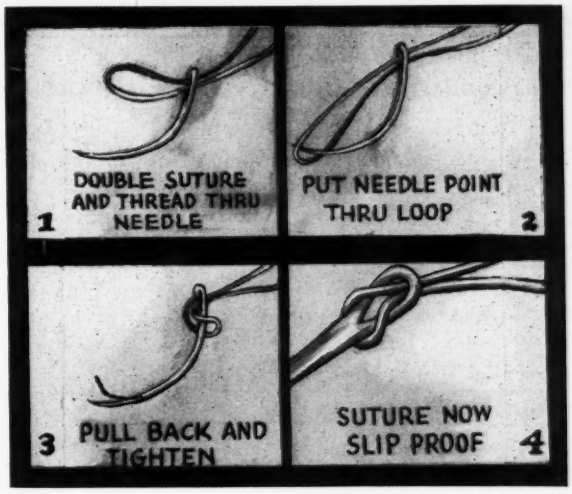
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make

SUGGESTIONS . . .

Slip-proof Suture Needle Tie

Louis L. Schwartz, D.D.S., Pittsburgh

4. A double thickness of suture material is threaded through the eye of a surgical needle. The loop is extended and the point of the needle is placed through the loop. The suture is pulled back and tightened. The suture will not slip from the needle during surgical closure.

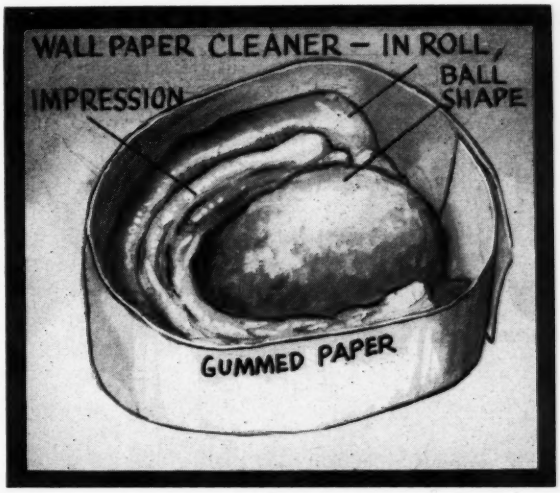


4

Boxing Impressions

W. R. Eberle, D.D.S., Chicago

5. Wall paper cleaner is used instead of clay or wax. The cleaner is rolled and kneaded and a ball-shaped amount is placed in the lingual portion of the lower impression. A roll of the material extends around the periphery of the impression. Paper toweling impregnated with wax or gummed paper strips is used to form the boxing.

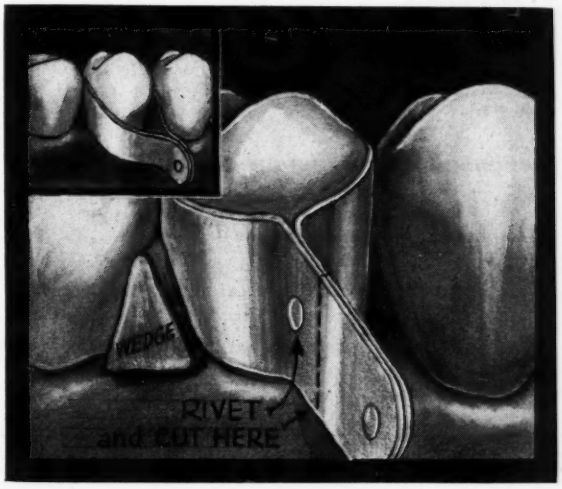


5

An Amalgam Matrix Band

Irwin Lightman, D.D.S., Toronto

6. A piece of thin stainless steel matrix material of suitable size is placed around the tooth. The free ends of the strip are riveted together. The band is pinched tightly around the tooth and riveted again as close to the tooth as possible. The excess material is cut and removed.



6

suitable illustrations; write a brief description of the technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Turn to page 380 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

TABLE I.—Factors Resulting in Avitaminosis*

Inadequate Intake

1. Anorexia, nausea, and vomiting due to gastrointestinal disorders, congestive failure, pregnancy or infectious disease
2. Self-imposed or therapeutic restriction, psychoneurosis, chronic alcoholism, fads, ignorance, poverty
3. Improper cooking and processing

Poor Absorption

1. Gastrointestinal disease, loss of mucosal integrity, hypermotility, fistulas, obstructive jaundice, Wangensteen suction
2. Vitamin deficiency, sprue syndrome

Decreased Utilization

1. Hepatic disease
2. Malignant disorders

Increased Excretion

1. Lactation
2. Parenteral fluids

Destruction

1. Alkalis, sulfonamide compounds, arsenic

Increased Requirements

1. Fever, infection, pregnancy
2. Metabolic disorders (diabetes, hyperthyroidism)
3. High carbohydrate diet, large doses of a single purified vitamin

*Adapted from *The Journal of the American Medical Association* **132**:558-559 (November 9) 1946.

TABLE II.—Aids in the Recognition of Avitaminosis

Vitamin	Signs	Symptoms	Accessory Laboratory Data
A	Xerosis conjunctivae, hyperkeratosis	Night blindness	Decrease in plasma A level
C	Gingival hypertrophy, anemia	Spongy bleeding gums, painful joints, subcutaneous hemorrhages	Roentgen changes in long bones, decrease in plasma C level, response to saturation test, capillary fragility
Niacin	Stomatitis, glossitis, cheilosis, papillary atrophy, nonspecific perineal lesions, urethritis, vaginitis, pellagrous dermatitis, depression, reactive psychosis	Nervousness, anorexia, diarrhea, sore mouth and tongue, epigastric burning	Decrease in urinary excretion of niacin
Riboflavin	Magenta glossitis, cheilosis; seborrhea; nasolabial folds, ears, forehead	Eyes; lacrimation, photophobia, discharge; sore tongue and mouth	Vascularization of cornea, decreased urinary excretion of riboflavin
Thiamin	Central opthalmoplegia, symmetrical polyneuropathy, combined system syndromes, cardiovascular disturbances	Weakness, fatigability, paresthesias—burning, calf tenderness, edema	Nerve degeneration as shown by biopsy, decrease in urinary thiamin excretion
K	Hemorrhages, with disorders of absorption or jaundice	Bleeding	Increased prothrombin time, other evidence of hepatic disease

MEDICINE and the Biologic Sciences

Allergic Rhinitis

Dentists, because of their professional contacts with patients over a period of time, are able to render those patients afflicted with allergic rhinitis a valuable service. These persons, young and old, are afflicted with a recurring nasal obstruction, accompanied with a profuse watery nasal secretion, postnasal discharge, sneezing, and loss of sense of taste and smell.

Children so afflicted are prone to experience itchiness of the nose and to develop mannerisms such as sniffling, nose wrinkling, and nose rubbing. Because of the chronicity, the condition makes the tissues more susceptible to infection. The bony structure of the hard palate is also affected, a high arched palate and dental deformities being produced.

Criteria detecting the condition are generally: the presence of a family history of other allergic manifestations (asthma, hay fever, eczema); blood and nasal eosinophilia; a history of clinical sensitivity and response to the administration of antihistaminic drugs and epinephrine. Inspection of the nose reveals a characteristic bluish gray appearance and reversible bogginess and edema. The turbinates are swollen and the nasal cavities are reduced in size and are frequently obstructed by mucous polypi.

It is easy for these patients to believe that they are victims of recurrent colds or "chronic sinusitis." Chronic nasal and sinusal infection present none of the local characteristics of allergic involvement. Normal mucous membrane in these instances is inflamed and red. Trans-illumination and roentgenograms show persistent opacity.

It appears that the parasympathetic nervous system has a role in nasal allergy. This action is probably linked to the cholinergic effect of histamine-like substances presumably released in persons with allergic disease by exposure to specific allergens. This release produces increased capillary dilatation and permeability with resulting extravasation of fluid and edema of the mucous membranes. As the central nervous system has a decided influence on the parasympathetic nervous system, it is obvious that emotional upsets will profoundly affect the symptoms of allergic rhinitis.

After a time certain pathologic changes occur. These include hypertrophy and hyperplasia of the connective tissue and epithelial cells. Pedunculation of the lining membrane produces polypoid degeneration. The cilia are destroyed and infection often supervenes.

The underlying cause of allergic rhinitis is exposure to a substance to which the patient is sensitive. This may be an inhalant, a food, drug, physical agent, or bacteria. Factors considered as affecting allergic rhinorrhea are endocrine disturbances, pregnancy and menstruation, climatic conditions, irritating fumes and chemicals, emotional factors, and nasal obstruction and infection.

Cold is of particular importance as a causative agent. Symptoms are commonly present in the morning as the patient steps out of bed. The sudden transition from the warm bed to the chilled air of the room produces nasal edema. This may be due to an allergy to cold or to a reflex congestion of the nasal mucous membrane brought about because cooled air passing through the nasal chambers needs to be warmed.

Treatment is divided into specific allergic therapy, medicinal measures, attention to nasal infection, and psychotherapy. It is essential that the allergist and the rhinologist work together.

Allergic rhinitis of long standing produces profound emotional changes. Appetite is impaired, losses in weight occur, sleep is disturbed, work and efficiency are interfered with, and the patient is not well. It is equally true that emotional upheavals frequently increase the severity of the nasal symptoms. Hence, there is a necessity for proper evaluation and understanding of allergic patients as human beings.

Criep, L. H.: Practical Aspects of Allergic Rhinitis, J.A.M.A. 136:601-604 (*February* 28) 1948.

Pain

The management of pain has been the subject of investigation by many researchers and clinicians in recent times. Too often in the past physicians have dealt with pain without a proper understanding of its importance. Frequently under the aura of mistaken humanitarianism, physicians have prescribed narcotics in excessive dosage. On the other hand, many considered pain as merely a symptom which furnished a clue to the diagnosis of a specific lesion. Such a procedure often leads to the neglect of the sufferer's comfort.

Today we recognize that various painful states deserve intelligent appraisal and, perhaps equally vital, a systematic plan for relief which will conserve the patient's social usefulness insofar as possible. The sensation of pain is no longer considered essential to a suitable biologic adjustment but rather an auxiliary or reserve warning of the potential damage to

tissues if the pain is allowed to persist.

The etiology of pain is associated with four general types of condition. The first and largest group of painful syndromes is associated with the organic change in the tissue of the visceral and musculoskeletal system resulting from infection, trauma, and neoplasm. The second group consists of painful states of neurologic origin such as the neuralgias and neuritides.

The third group is that consequent to spasm of smooth muscle of the digestive, urinary, or circulatory systems. And the last group consists of pain in the absence of demonstrable etiologic factors—the "psychogenic" type of pain.

Another, and perhaps more useful, classification of pain is concerned with the quality of the pain sensation. Pain which is burning, itching, sharp, or stabbing in nature is superficial in origin. It is associated with a positive reaction pattern on the part of the patient in that he wishes to do something definite about the pain. This is the response of the patient who has a "toothache." It is also seen in such injuries as skin lacerations and thermal burns which are not severe. The patient is anxious to take positive steps in rectification. Frequently, he is incensed and angry with his pain.

The other type of pain, originating in viscera deep in the soma, is aching, gnawing, and throbbing in character. It causes the patient to withdraw or rest. The abdominal pain in intestinal lesions of inflammatory origin typifies this response. The victim wants to be left alone with his misery. Usually he is not interested in heroic measures for relief but is interested solely in keeping as quiet as possible.

Both these types of pain are influenced by the personality traits of patients. There is extensive clinical evidence to indicate a considerable variation in pain threshold in different individuals and in the same individual at different times. This variation in pain threshold seems to be associated with personality traits and alterations in emotional texture.

Pain threshold may be modified by several factors in the environment or factors intrinsic in the individual. Physical alteration of the skin receptors may affect the threshold to pain.

Pathologic processes in a patient may alter pain threshold. This is the typical story of the patient who has suffered a long time and is no longer able to endure the same painful stimuli with equanimity. Probably the most significant of all is the influence of attitude—the psychologic factor. Distraction and simple fatigue can increase the pain threshold up to 35 per cent. The more intensive emotional experiences are capable of completely distorting ordinary concepts of pain perception.

And, finally, the pain threshold is influenced pharmacologically. This is the consistently important application in clinical medicine. The use of drugs, although not always properly executed, is the only realistic method of elevating pain threshold in the therapy of disease.

Rovenstine, E. A., and Papper, E. M.: Therapy of Pain, The Surgical Clinics of North America, New York Number, Philadelphia, W. B. Sanders Company, 1948, *pages* 484-492.

Tinted Lenses

Because of the vogue for tinted lenses, the Council on Physical Medicine of the American Medical Association published the results of a survey conducted among leading Consultants on Ophthalmic Devices. The report was published for the benefit of the public and for the ophthalmologists who are insufficiently informed and therefore misled by the extravagant and often untrue claims of a number of manufacturers of trademarked tinted lenses.

The vogue for tinted lenses has reached such an extent that most laymen and many ophthalmologists believe that the eyes need protection not only against daylight but against any light, even night light. Informed ophthalmologists disapprove of the widespread, continuous, and indiscriminate use of tinted lenses and object to the methods and wording of the advertisers of these glasses.

Unless the eyes are sick or abnormally weak, dark glasses are indicated only in the presence of extraordinary, excessive, or misdirected light as the purpose of light-filtering glasses is to protect the eyes against painful or harmful light. Healthy, properly corrected eyes should be well able to tolerate bright sunlight unless it is reflected directly into the eyes by water, snow, sand, or the like. When such protection is necessary the glasses should be dark enough to absorb 60 to 75 per cent of the light and they should be colorless—smoke or gray.

As a rule any person with normally healthy eyes should be comfortable under ordinary bright sunlight.

Tinted lenses should not be worn indoors under properly placed artificial light. They should never be worn outdoors at night as they are dangerous for night driving because the glare of an automobile headlight is due to the contrast with the surrounding darkness and no type of tinted glass can change that. The sense of ocular fatigue after daydriving is more often due to uncorrected or improperly corrected errors of refraction or of muscle balance, than to the bright light.

Despite the fantastic, absurd, and untrue claims of the manufacturers of certain tinted lenses, the lighter shades of colored glasses (tints that are hardly perceptible) offer little more protection against glare than clear glass. Claims have been made that these hyperphysical lenses match the complexion and yet are inconspicuous, thus improving the appearance. They are said to increase the visual acuity somehow or other and to protect the eyes against the ultraviolet and infrared in daylight. Exploiters maintain these glasses keep out most of the bad light and let in only the good.

Through these glasses they maintain that there are no annoying color disturbances—the makers have produced the impossible, a colored glass without selectivity. They maintain that the ophthalmologists should consider a tint as a component of every lens they prescribe. This means that

for the visual comfort of his patient the ophthalmologist would have to order a different shade for every intensity of light, indoors and out.

Cowan, Alfred: *Tinted Lenses, J.A.M.A.* 136:1098-1099 (*April* 24) 1948.

Present Status of Tonsillectomy

Tonsillectomy is now performed by dissection in most cases. The guillotine operation has been largely abandoned. In America local anesthesia is the anesthetic of choice but in Britain general anesthesia is favored. In adults the British use intratracheal anesthesia of nitrous oxide and oxygen.

Special attention is taken to find bleeding points so that they may be properly ligated. Because of this, postoperative reactionary hemorrhage is much less common than was formerly the case. Thus, the incidence of lung abscess and chest complications has been greatly reduced.

The whole tonsil is enucleated and tonsil remnants are not left to cause trouble later. The removal of adenoids is much more satisfactory and complete when the patient is well anesthetized. Although the adenoids may grow again after removal, there is less likelihood of this happening if removal has been complete. With the sulfonamides and penicillin now available for treatment, complications are less frequent than formerly.

The removal of tonsils by repeated diathermy and by application of caustic pastes has been found to be unsatisfactory and both methods have been abandoned. In the United States in recent years there has been some treatment of enlarged tonsils and adenoids by deep x-ray therapy. The results are promising. The improvement is believed to be due to the clearing up of the infection present.

Tonsillectomy should be undertaken at a time when complications from it are unlikely to occur. No operation should be done in the presence of local or general infection unless this is unavoidable. The patient should be apyrexial before surgery and no operation should be done within four weeks of an attack of inflammation of the upper respiratory passages.

Most authorities agree that tonsillectomy should not be done in the very young child. To determine the advisability of removing tonsils and adenoids, a clinical assessment of the local conditions must be made and due weight must be given to the history and the findings of a general examination. The teeth and mouth must be examined along with an inspection of the nose and nasopharynx and transillumination of the sinuses. Persistent redness of the tonsil and the adjacent mucosa suggests underlying infection.

The principal indication for the operation in both children and grownups is recurrent attacks of tonsillitis. If a child of five years or older has three attacks of acute tonsillitis in a year, the tonsils should be removed. Operation should also be recommended if there has been a quinsy as this occurrence is evidence of deep infection in the tonsil.

Interference with normal nasal respiration by day or by night is rightly regarded as an indication for operation. When the tonsils are very large, they undoubtedly play a part in producing mouth-breathing by encroaching on the nasopharynx. Adenoid enlargement certainly causes mental retardation and high arching of the palate and malocclusion of the teeth in long-standing cases. After the operation it is important that correct nasal breathing be established.

The tonsils may be the focus for a number of infections; however, sufficient evidence should be obtained to justify their removal in these cases. Children are often referred for operation because they suffer from frequent colds. The results of surgery have been disappointing in these cases. Operations are not performed as a rule in conditions of nasal allergy or asthma.

Tonsillectomy is a well-recognized method of treatment when certain organisms persist in the throat despite general and local treatment. Such a condition exists in some cases of "diphtheria carriers" and those who harbor the hemolytic streptococcus in their throats.

In an epidemic of poliomyelitis, no tonsil and adenoid operations should be performed as there is evidence of some relationship between tonsillectomy and the incidence of poliomyelitis.

Mell, W. A.: *The Present Status of Tonsillectomy, Am. Practitioner* 159: 427-430 (*December*) 1947.

Sympathectomy—Indications

One of the most useful procedures in dealing with peripheral vascular diseases is sympathectomy. The operation of lumbar sympathectomy ganglionectomy is performed easily through an anterior muscle-splitting extra-peritoneal incision. For this a good relaxing anesthesia is required, either spinal or pentothal or inhalation anesthesia supplemented by curare.

The dorsal sympathetic operation is accomplished by extrapleural decentralization of the second and third sympathetic ganglia and section of the chain between the third and fourth ganglia. The operation is performed after resection of the third rib and transverse process.

Both procedures carry extraordinarily little risk. Operations are followed by minimal discomfort and require only a brief period of hospitalization. They have their value because of certain physiologic changes which occur in the sympathetically denervated area.

There are three principal benefits from the procedure. First is the absence of sweating in the denervated area. This constitutes the primary reason for sympathectomy in cases of severe hyperhidrosis or bromhidrosis. The absence of sweating in limbs affected with the common peripheral vascular disorders is generally beneficial. Active sweating increases heat loss through evaporation and consequently has the effect of reducing the effective circulation. Sweating may

lead to maceration of skin which may be a factor in the development of ulceration, pyogenic infection, or gangrene. Cessation of sweating, therefore, affords an additional safeguard in such areas.

The second type of benefit from sympathectomy is the abolition of certain types of pain, as for example, the ischemic pain in obliterative diseases or after traumatic or other sudden occlusion of important arteries, and the pain of causalgia and certain other post-traumatic states. One can never assume that pain will be relieved by sympathectomy, but must first demonstrate that pain ceases or improves satisfactorily during a period of procaine anesthesia of the appropriate portion of the sympathetic chain. The sympathetic block should be performed, if possible, at a time when pain is present.

Before sympathectomy the patient should be encouraged to use the affected part actively and elastic support when needed. Local surgery should be given a trial. The pain felt on exposure to cold in various vasospastic states generally responds well to the sympathectomy.

The third benefit of sympathectomy upon which its maximal usefulness is based is the elimination of vasoconstrictor impulses, with resultant vasodilatation. The possible improvement in circulation can be gauged beforehand fairly accurately by careful observation of the warmth and color of the affected hand or foot following some procedure which temporarily eliminates the vasoconstrictor impulses—reflex vasodilatation, spinal, or general anesthesia, peripheral nerve block, or sympathetic block. Under such conditions a transient increase in circulation to a state of maximal vasodilatation will occur in purely vasospastic conditions and a similar permanent change can be anticipated following sympathectomy.

In cases of obliterative disease, the improvement in circulation may be great, moderate, small, or insignificant, depending upon the prevailing tonus in the unobstructed vessels. The efficacy of sympathectomy in these cases is roughly related to the degree of improvement in circulation which it accomplishes. In certain individuals, however, in whom little or no apparent improvement follows sympathectomy, the small increase in circulation achieved by the sympathectomy is sufficient to save a limb and to abolish pain.

In addition to the usual vasospastic disorders and the common obliterative diseases, sympathectomy is often useful in rendering the collateral circulation more efficient in cases of ligation, thrombosis, or embolic occlusion of major arteries, and as an adjunct in the operative treatment of aneurysms and arterio-venous fistulas. Sympathectomy is the method of choice in any case in which continued maintenance of the maximal possible vasodilatation is desirable.

Schumacher, H. B.: Surgery in Peripheral Vascular Diseases, The Surgical Clinics of North America, New York Number, Philadelphia, W. B. Saunders Company, 1948, 294-303.

Cutaneous Cancer

The problem of cutaneous cancer offers a favorable possibility of control, if not solution, because of the visibility and accessibility of the lesions. Even though a large percentage of cutaneous cancer occurs on the exposed parts of the body, a great number of early cases are missed or neglected. And because of this, irreparable damage, unsightly deformity, and death all too often result.

The classification of cutaneous cancer is not so important diagnostically as it is therapeutically. Every localized cutaneous growth, regardless of its size or duration, should be looked on as a potential cancer. Only with accurate microscopic diagnosis being made should one relax suspicion. Biopsy in every growth is imperative.

Cutaneous cancer may occur at any age. However, the majority of such lesions is found in persons past 50. The age of the growth is very important. A small stationary growth should be investigated as thoroughly as a more destructive one. It has been noted that highly malignant growths may remain small and dormant over many years for reasons that we do not understand.

With the exception of malignant-melanoma the smaller the cancer, the better is the prognosis. The ideal time for treatment is when the lesion is small.

Lesions which grow upward, that is rise above the surface of the skin, as a rule are easier to manage than those whose direction of growth is either lateral or into the skin surfaces. The appearance of the base of the lesion gives valuable information. A constricted base with a pedunculated growth usually indicates that lesions are more amenable to treatment. Those lesions with a broad sessile base are amenable if growth is not lateral and downward. Infiltration and ulceration show extension and mean that the boundaries of growth cannot be accurately or completely outlined. The inability to determine all infiltrations probably accounts for the failure of radiation treatment in many cases.

When lesions are considered in relation to their locations, one should note the anatomy of the areas. Lesions occurring in soft movable parts such as the center of the cheek are much easier to handle than lesions occurring in parts that are tightly stretched over the underlying tissues such as the tip of the nose, the chin, and similar areas. No area is immune to cutaneous cancer and every location offers its own problem.

The more rapid the growth the more grave is the prognosis. Rapid growth indicates that surrounding tissues are not offering an effective barrier to extension. A sluggish, slowly growing lesion denotes good tissue resistance and the new growth is well confined.

Nothing is known of the etiology, pathogenesis, and true biology of most cancers of the skin. Almost all cutaneous cancers which do not develop in a pre-existing lesion begin as a small globular elevation

which has the appearance of a minute mutilocular cyst. Classifications as a rule must be based on their histology because a clinical classification is impossible at present.

Precancerous lesions are those pathologic changes in tissue which, without being cancerous, show the tendency sooner or later to develop into actual cancer. Many excellent studies have failed to cast much light on the beginning of cell cancerization. Therefore, all precancerous lesions should be recognized and treated if necessary. Areas harboring chronic inflammation, such as plaques of lupus vulgaris, discoid lupus erythematosus, chronic roentgen dermatitis, and even stasis ulcers may be broadly considered precancerous.

Basis types of cancers of the skin are usually divided roughly into basal cell and squamous cell types. Basal cell cancer is the most frequent and least malignant of the cancers of the skin. These lesions are strictly confined and do not metastasize. The squamous cell cancer is much more resistant to radiation treatment and furthermore may metastasize to the adjacent nodes or glands.

For the dentist it is important to remember that the large percentage of skin cancers occur on the face, neck, ears, and forehead. Keeping this in mind he should remember, too, their positive diagnosis rests on the excision of tissue for microscopic study.

Michelson, H. E.: Cutaneous Cancer, J.A.M.A. 136:683-686 (*March* 6) 1948.

BCG in Tuberculosis

There has been a revival of interest in the vaccine BCG. As a result the National Tuberculosis Association made known its conclusions and recommendations as to the use of BCG. These were made in a report submitted by the Chemotherapy Committee of the American Trudeau Society, Medical Section of the National Tuberculosis Association, to the American Tuberculosis Society Executive Committee in January of 1948.

BCG is a vaccine developed by Calmette and Guerin from a nonvirulent strain of tubercle bacilli. It causes a primary tuberculosis infection. As a result of this infection the body sets up defenses against the disease, inducing an artificial immunity of varying degree.

Vaccination with BCG does not provide complete protection against tuberculosis and until further controlled studies are conducted the vaccine cannot be recommended for the general population. Its use is recommended for members of groups constantly exposed to tuberculosis if they have a negative reaction to the tuberculin test. A positive reaction to the test indicates that a person has had a primary tuberculous infection and his body has acquired a certain degree of immunity. Such a person does not benefit from vaccination with BCG.

The degree of protection reported following vaccination is by no means complete nor is the duration of induced relative immunity permanent or predictable. Several well-controlled studies are under way to improve the immunizing agent and to determine which groups in the general population should be vaccinated.

An appreciable reduction in the incidence of clinical tuberculosis may be anticipated in certain groups of people who are likely to develop tuberculosis because of unusual exposure, inferior resistance, or both. Doctors, medical students, nurses, hospital, and laboratory personnel whose work exposes them to contact with the bacillus of tuberculosis are vaccinated to good advantage. Individuals who are unavoidably exposed to infectious tuberculosis receive benefit from BCG. Patients and employees of mental hospitals, prisons, and other custodial institutions in which the incidence of tuberculosis is known to be high may be vaccinated to good advantage. Children and certain adults considered to have inferior resistance and living in communities in which the incidence of tuberculosis mortality rate is unusually high are benefited by the vaccine.

Vaccination of the general population is not recommended at this time except for carefully controlled investigative programs.

BCG vaccine should not be made available for general distribution in the United States now because the most effective strain of BCG has not been agreed upon, nor has fully satisfactory standardization of the vaccine been achieved. The most effective method of vaccination is still undecided. Vaccination seems unwarranted in areas in which the tuberculosis mortality rate is extremely low and in localities in which the tuberculin test is of especial value as a differential diagnostic procedure.

The Society believes the most effective means of control in the general population are (1) further improvement of living conditions and general health, (2) reduction of tuberculosis infection, (3) prompt and adequate medical and surgical treatment of patients with active disease, (4) segregation and custodial care of those not amenable to accepted forms of therapy, and (5) adequate rehabilitation.

ATS States Policy on BCG, Bull. Nat. Tuberc. A. 34:39-40 (*March*) 1948.

Pseudohemophilia

Hemorrhagic disorders in nearly all cases may be classified as those associated with: (1) deficiency in blood platelets as noted in thrombopenic pupura; (2) a disturbance in one of the coagulation factors of the circulating blood as seen in hemophilia, hypoprothrombinemia, and fibrinopenia; and (3) a disturbance of the capillary walls such as vascular or thrombopenic purpura.

Occasionally one sees cases of excessive bleeding which have no apparent place in the classification of hemorrhagic disorders. These cases are characterized by an excessive tendency to bleed in the presence of normal platelets, a normal coagulation time, normal serum fibrinogen, and a normal prothrombin time. The only consistent abnormality is a prolonged

bleeding time. The term pseudohemophilia has been applied to this group of cases.

In a review of many of these cases in medical literature, it was noted that a positive family history of tendency to bleed was recorded frequently. There was a slight predominance of women (54.8 per cent).

The cardinal symptom in this condition is excessive bleeding and in the group of cases recorded, the most prominent symptom was epistaxis which was noted in 75 per cent of the individuals. Bleeding into the skin occurred in 70.3 per cent and bleeding from the gums 39.1 per cent.

The important point to be noted by dentists is that dental extraction often gives the first indication of pseudohemophilia. Severe post-operative bleeding may occur in other surgical procedures. Bleeding into the joints was recorded in 12 to 15 per cent and uterine bleeding was found in 17.9 per cent of females over 12 years of age.

Bleeding time varied widely from "normal" to over 300 minutes in severe disturbances. Coagulation was usually normal. Normal platelet counts obtained with all known platelet tests. Clot retraction was normal.

Evidence suggests that a vascular defect might be responsible for pseudohemophilia.

Treatment is largely prophylactic. A patient with a history of easy bruising or other tendency to bleed should be studied for a possible hemorrhagic diathesis. If he has pseudohemophilia, operations should be avoided if possible. Necessary operations may be done with proper aids such as thrombin and fibrin foam and transfusions. In cases of active hemorrhage the only reliable measures are pressure and local use of thrombin-fibrin foam. Death in cases of pseudohemophilia is rarely due to bleeding.

Estren, S; Medal, Sanchez; and Dameshek, William: Pseudohemophilia, Blood 1:504-533 (*November*) 1946.

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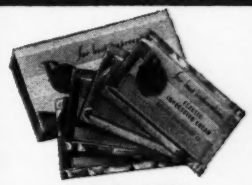

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Contra-Angles

The American Association of Edentulous Dentists . . .

Dentists lose their teeth the same as other people. The dentists who wear dentures should have a body of valuable information regarding prosthetic techniques. If the dentists who are denture wearers could get together and exchange case reports of their first-hand experiences, we could accumulate a record that would be helpful to everyone constructing, and everyone wearing dentures. Some years ago, such an organization of edentulous dentists was suggested. So far as I know, the group never met; and if they did, nothing appears in the literature reporting their meeting.

The suggestion for a new society has been made by Doctor J. W. Siegfried, of Santa Monica, California, in a letter: "In view of the many and varied techniques designed to produce more favorable results in full denture procedures, we can often be allowed to wonder how such amazing results can be obtained with the wealth of complications which seem to enter. Just how far have we advanced in our techniques, and how far have we actually departed in the maze of complications from the first principles laid down by Snow, Wadsworth, Gysi, and Green?

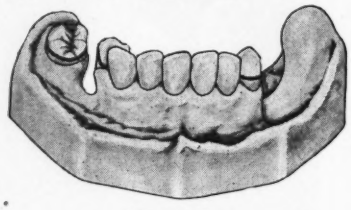
"Perhaps a Society called the A.A.E.D. (The American Association of Edentulous Dentists) is now in order. Out of the more than 70,000 dentists in the country, there must be at least 10,000 who are edentulous. Have they not reached some conclusions, regarding the best procedures for the good of themselves as well as for their patients? Could not their findings be of value to the profession? The experiences of those in the profession who are edentulous would be welcome. A publication such as DENTAL DIGEST would be invaluable for the proper cataloguing of the information, which might be gathered from this group.

"A fine old dentist once said to me, in one of my clinics: 'Doctor, I think that no one who has not had to wear dentures can really be qualified to make them for another.' Of course, that is too strong a statement, but it *is* expressive."

CASE HISTORY IN GOLD*

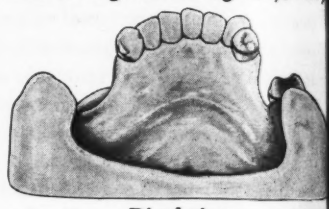
The problem presented by this mouth was unusual in that the abutment teeth were especially difficult to clasp. The left cuspid is peg-shaped, the right first bicuspid leans abnormally toward the linguodistal, the right molar stands straight in the arch buccolingually with an unusual mesial tilt.

Designed according to the Ney Surveyor System, the problem was worked out very successfully. The complete design in gold has the all-importan elements of bracing, support and re tention which are so necessary if th case is to function correctly and com fortably. The NEY-ORO G-3 castin is strong and light, weighing les than 6 dwt. as shown here, withou allowance for sprues and grinding (In PALINEY #4, white gold, th same casting would weigh 25% less)



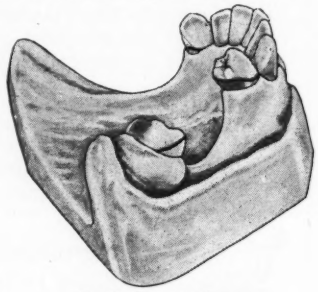
Mesial view:

The survey line on the left cuspid defines an undercut which is ideal to receive the flexible tips of the back-action clasp. Note the absence of any mesiobuccal undercut on the right bicuspid.



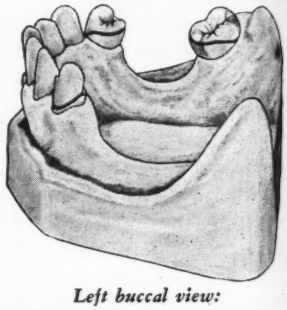
Distal view:

A major advantage and characteristic the back-action clasp is that it is designe to enter the distal undercut below th survey line and, in so doing, hold th saddle securely against the ridge.



Right buccal view:

Note the rest preparations on the cuspid and bicuspid; also the exaggerated mesial tilt of the molar with its #2 survey line.



Left buccal view:

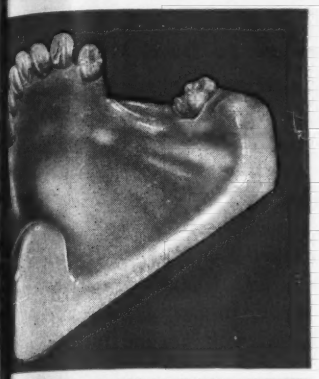
Even though the molar abutment wer extracted, the correctly designed and con structed back-action clasps on the anterio abutments would permit the case to func tion perfectly.

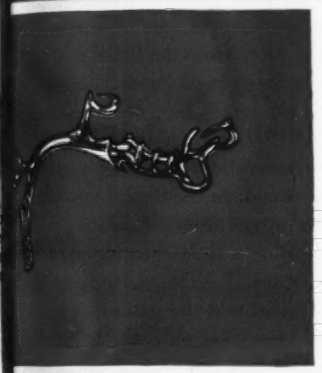
* Number Fourteen of a Seri

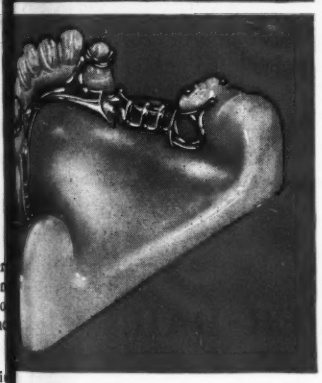
PUBLISHE

He Lived the Good Life . . .

He was my dear friend, although I saw him only four or five times. Our letters were infrequent. He brought comfort to the afflicted, even if his name is not widely known among the great servants to mankind. He brought comfort that came out of his own suffering. He was born with a cleft palate, and spent his good life in developing appliances that would relieve those who are crippled in speech.







Where it can be used, the back-action clasp engaging a distal undercut is ideal for holding a free-end saddle securely against the ridge, and it *will* work on a peg-shaped abutment such as this left cuspid. Two occlusal rest seats were prepared, — a slice preparation with square floor at the distolingual angle, and the other to accommodate a mesionincisal hook. Provided there is sufficient thickness of tooth enamel, the distolingual slice is an especially good rest preparation because of the support it gives and because it does not show gold.

A back-action clasp was also indicated for the right first bicuspid. Although there is no mesiobuccal undercut, retention is obtained because on the distal there is an undercut in relation to the other clasped teeth. The molar abutment, standing vertically in the arch buccolingually but with a pronounced mesial tilt, called for a divided-arm or #2 clasp.

Truss arms and rigid portions of the clasps supply bracing. Support is derived from the occlusal rest seats on all abutments, the tissue-bearing saddles and the entire lingual section of the back-action clasp on the bicuspid. Because of the abnormal linguodistal tilt of this abutment, the rigid lingual portion of the clasp was carried over the lingual cusp and acts as an occlusal rest. Retention is supplied by the mesial tips of the molar clasp arms, the distal and buccal portions of the cuspid clasp, and the distal of the bicuspid clasp.

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John J. Fitz-Gibbon died in June, at his home in Holyoke, Massachusetts, in the 59th year of a fine life of service and generosity.

It is sixteen years since I first met John, at the Buffalo meeting of the American Dental Association. I was admiring his magnificent exhibit of cleft palate appliances. We visited pleasantly, then stepped outside the meeting hall into the warm autumn sunshine to continue our newly made friendship. I asked him how he came to work in this field. His eloquent answer was to toss back his fine head with the thick mass of grey hair and point to his own palate. There I saw, in the bright autumn day, a palate that had been cleft at birth, and closed by his own skill. Briefly he told me the story of working in a dentist's laboratory from boyhood, and fervently dedicating his labors to perfecting an appliance that would help restore the crippled to a full life. He succeeded.

John Fitz-Gibbon encouraged other dentists to try their skills, and to help cleft palate victims. He helped me with two cases that I corrected myself. Now when I see these two young women who have been restored to a richer life, I will think of John, and bless his memory. Thousands of others are in his eternal debt.

Make Conventions Better . . .

It won't be long until the dental meeting season begins. Many of us will come away from meetings in disappointment. The programs will have been poorly planned. Arrangements will have been made with fumbling clumsiness. The speakers will be disappointing.

A hard-hitting article on the convention theme has been written by John W. McPherrin, editor of *American Druggist*. Mr. McPherrin says with vigor and courage what many of us have thought:

"Last year, more people than ever before had the time and money to attend business conventions. At many 1947 meetings, the veterans, who always attend, were outnumbered by those who were attending their first association convention. How many of these newcomers will be present at the 1948 conventions will depend upon what they thought of their first meeting.

"Those who go to a convention for the first time naturally expect to get some good out of it, and they mean more than a jolly time. They want that too but, to justify what it costs them to attend, they think they should take home some useful ideas that will prove more important and lasting than a few free goods and a convention headache.

"Regardless of what the entertainment costs may be, the highest cost of any convention is the total amount paid by all of the association members for their traveling expenses and hotel bills. If we add to this whatever they think their time is worth, it will be seen that even a small convention represents a very large investment by the members. Regardless of whether the meeting is for retail druggists, wholesalers or manufacturers the cost of attending makes it

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vitally important that useful and stimulating program be provided.

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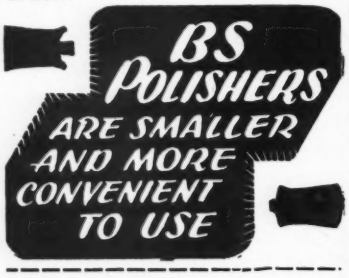

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stand why railroads couldn't conduct their affairs like other businesses. Namely, over the telephone, or by mail, sending people a bill for tickets. The idea that a traveler must present himself in person to make a reservation or to pick up tickets must be a hang-over from the stage coach days. With all their slick equipment, the railroads have a long way to go to improve their human relationships. The Baltimore and Ohio deserves praise for good human engineering as well as mechanical.— E.J.R.

A Point of View Toward Orthodontic Treatment

CHARLES M. WALDO, A.B., M.S., D.D.S.,

Cambridge, Massachusetts*

Health the Criterion

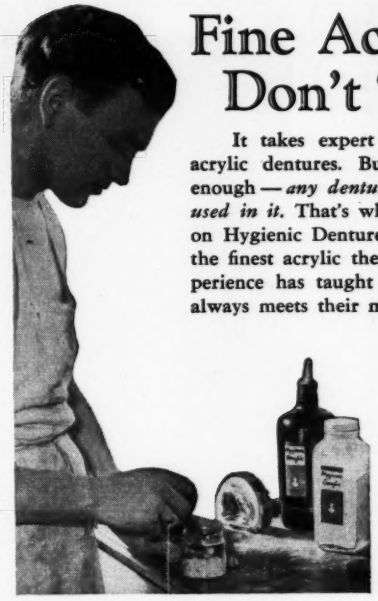
IF WE CONSIDER orthodontics a health service, the only possible consideration in determining the patient's needs is: the health of the patient. If the patient is healthy or if his health is not threatened, he does not *need* treatment. If he is not healthy because of conditions that fall within our province, he *needs* enough treatment to return him to a state of health and no more.

This point of view is not new or original with me. For years it has formed the basis of practice for a numerically small but significant group of men who follow no "system" and, in fact, have little in common except a desire to serve their patients and a respect for biologic fact in so doing.

There are reasons why this point of view has not been more widely accepted: (1) It is no short cut to the easy solution of orthodontic problems; (2) it requires us to consider much more than the teeth and facial proportions in evaluating the status of each patient who comes to us; (3) if the patient is a growing child, it may require repeated observations

(*Continued on page* 376)

*Harvard School of Dental Medicine



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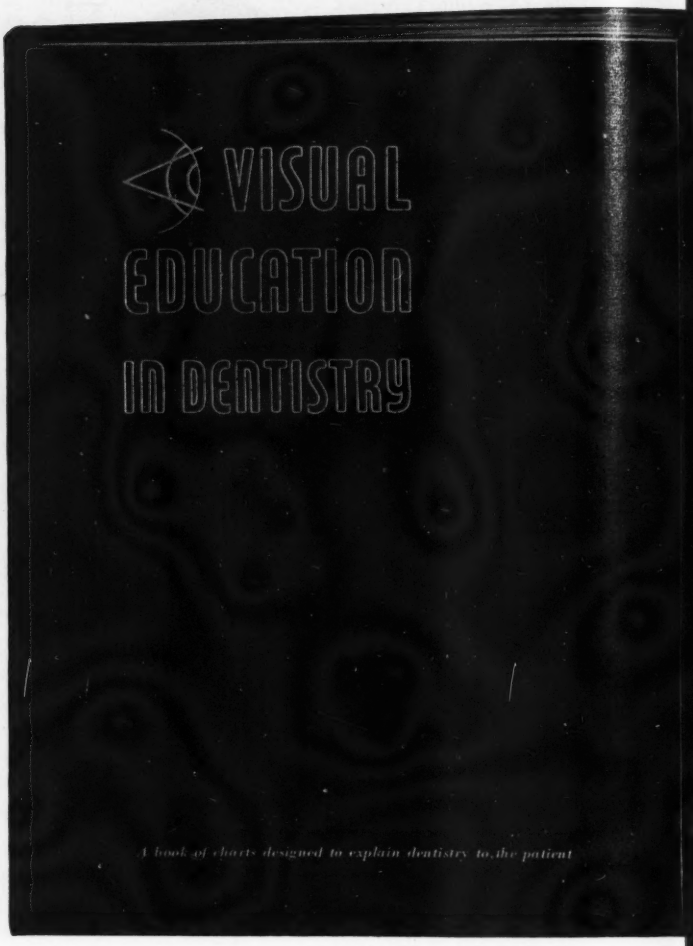

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(*Continued from page* 373)

before decisions can be reached. The usual definitions of health (the absence of disease) and of disease (a departure from health) are not very helpful to us.

There is need for a broad enough concept of what is normal to allow for variations which do the patient no harm. We can put this point of view to work in everyday practice by starting from the premise that *all conditions are normal unless we find evidence that they handicap the patient or threaten seriously to do so.* I have found the following outline useful in deciding whether or not conditions of immediate concern to the orthodontist constitute handicaps to health in a given case:

1. Handicaps to physical well-being.

a) Conditions which seriously interfere with the mastication of food or with speech.

b) Conditions which endanger the health of the teeth themselves, their supporting structures, or adjacent soft tissues.

c) Conditions in which the mechanical relations of the opposing teeth tend to restrict or pervert facial growth.

2. Handicaps to mental well-being.

a) Conditions which seriously detract from the patient's appearance.

b) Conditions which are a real source of worry, but do not seriously detract from his appearance.

c) Conditions falling under "A" which are a real source of worry.

Where decisions are difficult, we will have to find out as much as we can about the patient: What sort of person he is, his trends and tendencies; what his parents and brothers and sisters are like; his particular requirements; what sort of environment he lives in and is likely to live in; what his biologic assets and liabilities are. It should not be expected that this can always be done in one or two visits. In many cases repeated observations over a period of months or years will be necessary.

Malocclusion and Chewing Efficiency

It has been widely assumed that any malocclusion, that is, any significant departure from the concept of ideal occlusion, decreases chewing efficiency and therefore endangers the nutritional status of the patient. Even if his nutritional status appears to be good, it is assumed that it will be better if malocclusion is treated.

How well do we need to chew our food? How efficient does a dental apparatus need to be to play its part in an adequate digestive system? So far as I know there is little or no evidence but there are numerous indications that, under ordinary circumstances, it doesn't need to be very efficient. Much of the food we eat is ready to be swallowed without chewing; well nourished individuals are seen who have (1) very poor dental equipment or (2) very good dental equipment which they hardly use.

It seems likely that individuals can be expected to differ in their needs

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for masticatory efficiency as they do in other respects and that the requirements of the same individual may vary. A child poorly endowed by nature may need the advantage of extra chewing efficiency but this must be decided on the merits of the individual case.

Patient's Reaction to Appearance

It has also been assumed that any malocclusion which is esthetically undesirable to the orthodontist is a detriment to the well-being of the patient. Not all malocclusions which detract from the appearance of the patient, however, constitute handicaps to the mental health. Combined with an assured, aggressive personality and a satisfactory adjustment to environment, even a severe deformity may be well tolerated. On the other hand, the importance of a trivial irregularity should not be underestimated if it is a real source of worry to a timid, insecure person.

Much could be said about the handling of these cases. The point I want to make particularly is that decisions regarding them should rest on the requirements of the individual case and not on the preference of the orthodontist.

Benefits to Patients

I have tried to indicate how a point of view based upon meeting the needs of the individual patient can be used as an approach to the problems of orthodontic treatment. What are some of the implications of this point of view from the standpoint of the patient? If it is followed conscientiously, it results in a minimum of treatment, helping us (1) to utilize our efforts in treating cases that really need it and, (2) to confine our treatment of any case to that which seeks results of real value to the patient.

In addition, this view removes the curse from limited treatment objectives designed to eliminate only the most distressing handicaps where a lack of financial or biologic resources precludes more thorough treatment. Such limitation of treatment has been bitterly decried by the advocates of "all or none" treatment as lowering the standards of the profession. They hold that only the best is good enough for their patients, that the best is perfection (that is, what *they* conceive to be the ideal), and that it is not right to aim at something less because the patient cannot pay.

These are admirable sentiments, but no matter how sincerely they are held, the practical result is that many people are forced to go without treatment who would be immeasurably benefited by a short period of treatment. I have treated a number of such patients and seen six months' treatment take them out of the category of the handicapped and make them, not perfect, but about like the rest of us—which was what they wanted. No charity was asked or given; I was as well paid for my time as I would have been in any event, not counting the

(*Continued on page* 380)

(Advertisement)

Out of the Same Barrel?

An oral survey taken among representative groups of dentists reveals the interesting fact that many of these men believe that all denture base acrylics are, to all intents and purposes, similar — that they all "come out of the same barrel."

These men appear to feel that color is about the only real difference and that the rest is "sales talk" on the part of the manufacturer. Inasmuch as there is a large differential between the price of the lowest and that of the highest it would appear that there is a very evident need for the dissemination of more factual and scientific information on these acrylics. Lacking that, what proof has the dentist that he is getting anything different or better when he pays many times as much for one brand as he does for another?

The answer to this $64.00 question lies to a considerable extent in the length and type of research preceding the introduction of a product, in the number and kinds of manufacturing processes necessary to its production and in the equipment essential to that production. There are certain differences in distribution costs as well. Cheap products are often "distributed" from the back trunks of dirty automobiles, in bulk, from an unsanitary container. The better type materials are carefully handled from start to finish, are packaged in sightly and hermetically sealed and expensive packages, are given a considerable amount of necessary advertising to call their virtues to the profession's attention, and are distributed through reputable dental supply houses with their normal distribution expenses included in the final cost.

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The mere fact that they are consistently advertised in the journals over a period of years is at least a guarantee to the dentist that they have been generally accepted, are not toxic and in general are good products. If they do not conform to those and other standards they simply disappear, because nothing will kill off a poor product faster than a generous advertising campaign behind it.

But advertising, while educational to the extent that it acquaints the dentist with the utility value of a product nevertheless does not guarantee its superiority unless it advances demonstrable claims, and backs them up with proof. It is observable that there is a distinct lack of scientific proof in the advertising columns about the qualities of any acrylic denture resin, beyond the ordinary statements of dimensional stability, color and the ADA acceptance standards.

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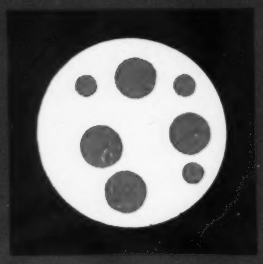

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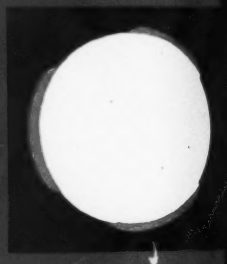

LOKTONE

In these drawings from photomicrographs (magnified 1000 X) note how the pigment of Loktone is actually locked within the tiny spherical granule.

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In the typical denture base materi granule the pigment is in the form a relatively insecure coating on th outside surface.

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Investigation will probably indicate that most known manufacturers of this material purchase it from the producer and simply pigment and package it — no doubt giving it the usual tests for the ordinary quality standards. Recently there has appeared on the market an entirely new product — LOKTONE — on which some entirely new claims are made and proofs of superiority in several directions offered.

The Color Is Locked In

A basic improvement in Loktone is in color control and uniformity. Ordinary materials are colored by a mixing process that simply coats the pigment on each granule. Evidence of this is seen in the color always found clinging to the inside of polymer bottle caps, after shaking. Additional proof is furnished by the manufacturers who invariably state in their technic directions to spatulate the mix when processing. This spatulation is for the primary purpose of distributing color and avoiding streakiness, inevitable if not done.

Mixes Itself

Loktone eliminates spatulation and therefore risk of air trapping and also excessive evaporation because of its unique "locked in" color. The pigment is inextricably locked within the polymer granule and cannot be washed out even with methanol or soap and water. This locked-in color process insures controlled shades, uniform distribution of color and eliminates risk of blanching, streaking or segregation of pigments.

Unique Manufacturing Process

Loktone is distilled, fractionated, polymerized and cross-linked in a process that eliminates the difficulties attending the usual manufacture of denture base materials where the operation starts with the receipt of uncertain raw acrylic powders from the commercial manufacturer.

Five years of research have gone into the production of Loktone plus an eight month clinical test by a leading dental college which reports "good" and "excellent" on every standard by which a denture base material is measured and considered.

Finally, the esthetics are exceptional. The unusual resemblance to human tissue in tone and color has been repeatedly commented on by users.

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CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 360 *and* 361)

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(*Continued from page* 377)

satisfaction which the patient and I received.

Comments

Let me repeat that the course I have indicated is no short cut. It calls for thought, judgment, and a willingness to break with tradition but it is well worth the effort. *All other points of view have one great fallacy in common — they ignore the wide range of harmless variation in human beings and attempt to define in a positive way what is right or "normal."* Such definitions are useful in orthodontics in so far as they help us to classify and describe occlusal conditions and make orderly observations, but they are inadequate and misleading as criteria to determine treatment.

—From *Journal of Dentistry for Children* 13:95-98 (Fourth Quarter) 1946.

Hygiene of the Voice

FROESCHELS[1] describes an original method of treating functional disturbances of voice. He designates this as the chewing method.

Chewing and Speaking Related

The idea is based on the observation that one can chew, speak, and even sing at the same time.

1. The same muscles and the same nerves of the upper resonating cavities are engaged in the two functions; Froeschels has therefore concluded that chewing and speaking must be somewhat identical.

2. Long observation convinced Froeschels that chewing was the origin of human speech. It appears that members of primitive tribes continually produced voice during chewing. Mammals frequently produce voice while chewing.

3. He sees further proof in the fact that a deaf mute will suddenly acquire a pleasant voice when ordered to chew with voice production.

---

[1]**Froeschels, E.:** *Hygiene of the Voice, Arch. Otolaryng.* **38**:122 (August) 1943

Chewing Method

The method has been tried on thousands of patients, Froeschels reports.

1. The patient is asked to chew as usual with closed lips, but without anything in the mouth, and to observe his tongue, which moves continually during the chewing.

2. Immediately afterward he is asked to chew "like a savage," that is, by opening the mouth and with extensive movements of the lips and tongue. (Many people when chewing with open mouth have the tongue continually on the floor of the mouth but that, according to Froeschels, is not the way savages chew; they lift and drop the tip of the tongue. Only the original method of chewing guarantees the setting free of the voice.)

3. The patient must next give voice during chewing. If the chewing is done correctly (that is, with vigorous movements of the lips and tongue), a great variety of sounds escape the mouth.

The patient is advised to chew with voice production at least twenty times a day for a few seconds only but should always avoid doing so mechanically. He should act with the guiding idea of having some food in his mouth.

Results of Treatment

As a result of these chewing exercises, the hyperfunctional voice changes immediately into a free and normal one. Abnormally low female voices rise during chewing. Less severe cases which Froeschels claims have responded successfully to treatment are: severe breaks of the voice during the change at puberty, eunuchoid and perverse voice changes.

—From Editorials, *Journal of the American Medical Association* 135: 1154-1155 (December 27) 1947.

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Address .....

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The Hanson family of "I Remember Mama" was a family that faced the future with confidence—a confidence all due to Mama. "If anything goes wrong," she'd say, "there's always my Bank Account to pull us through."

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That's why so many families have begun to save the automatic, worryless way—with U. S. Savings Bonds.

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And to make it simpler still, your government offers you two fine plans for their purchase: (1) The Payroll Savings Plan at your firm. (2) For those not on a payroll, the Bond-A-Month Plan at your bank.

AUTOMATIC SAVING IS SURE SAVING—
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U.S. SECURITY LOAN

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CONTINENTAL CHEMICAL CO.
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